Chemical Week

February 16, 1952

Price 35 cents

Don't think that silicones are just "war babies"; makers bet millions on long-term markets . . . . p. 11

NPA's Belsley: Sells execs on Washington stint; goal: industry-wise controls . . . . . p. 12

Cost-conscious chemical makers eye mechanical rectifiers; why: efficient at low voltages . . p. 37

"Ocean" freight will topple traffic patterns when Seaway project gels . . . . . p. 47

There's a fight raging to revive fair trade; but don't bet on easy, swift victory . . . . . p. 51

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Chemical Week

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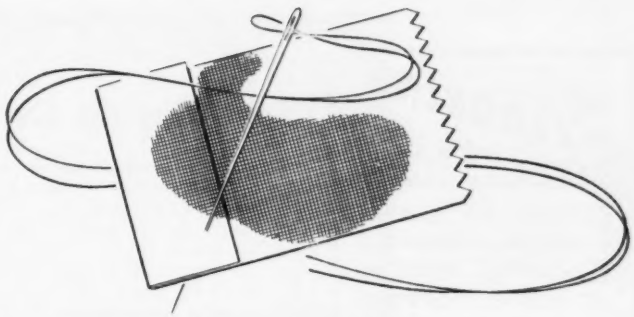

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OPINION . . . . .

Fast-Moving, Ever-Changing

Our chemical process industries are dynamic, fast-moving, everchanging. You executives, above all, well recognize that fact. No magazine whose purpose it is to report and interpret the significant news can fulfill its obligation to its readers unless it, too, is fast-moving, ever-changing.

Keenly conscious of this need, we have made a goodly number of improvements in CW over the past year. Some of them—complete reorganization of several departments, crisper writing, sharper pictures—you may have noticed; others, such as the switch to better type faces, may well have passed unnoticed. In total, however, all these modifications were made with one objective: to make CW more readable, more useful to you.

We have not heretofore mentioned any of these changes. But this week we are introducing a major new feature—a complete department devoted to Distribution *(p. 47)*. In it we will report on all the news that deals with chemicals, chemical products and equipment after they leave the plant—packaging, technical service, sales techniques and organization, market research, customer relations, traffic management, legislation.

This we regard as a significant expansion of our business news reporting service, and we think you may be interested in knowing just how it came about.

Here is the background: At our regular editorial conferences we dissect, week by week, the news of the chemical process industries. We analyze what's going on (or about to happen)—what's new in research, production, specialties, law, labor, finance—what it means, what it bodes. Of late these "what's the news" sessions have pointed up one fact: there's plenty happening in distribution. Consequently, we have geared up our coverage of this oft-neglected aspect of business news and, after a few weeks of "pilot planting," have decided to inaugurate the department as a regular feature.

It may surprise you that in times such as these—when a sellers' market still obtains to a substantial degree—that we should regard distribution as a top-important phase of operations. It is. There are some rumblings of a buyers' market already; many companies are busy overhauling their distribution set-ups, bearing down on market research, sharpening up their sales tools, paring selling costs. And more companies will be forced to re-examine their distribution tactics in the months ahead.

That's why we are launching our new department now. We hope, of course, that this additional service will make CW still more useful to you.

—**W. Alec Jordan,** *Editor.*

Taken for Granted?

To The Editor: Your article in the Jan. 5 issue about the new soil conditioner, Krilium, was interesting and well written, but —. The cuts captioned "Hedrick and Mowry" prominently pictured a girl who was not identified.

Is it your policy to take us women for granted, or ignore us?

I protest such treatment . . .

Patricia G. Shawd
Dept. of Chemistry
The Ohio State University
Columbus, Ohio

Unchivalrous mayhap, but far from misogynists are we. Herewith a special photo of pert, photogenic Miss Pat Brown, home gardener.—Ed.

Pat Brown

Barren Shelves

To The Editor: . . . I have just read your news report discussing the effect foreign competition is having on scientific apparatus and equipment makers (Threat from Abroad, Jan. 26) . . . I have very little quarrel to pick with your report. However, you say that "the Japanese and Germans make

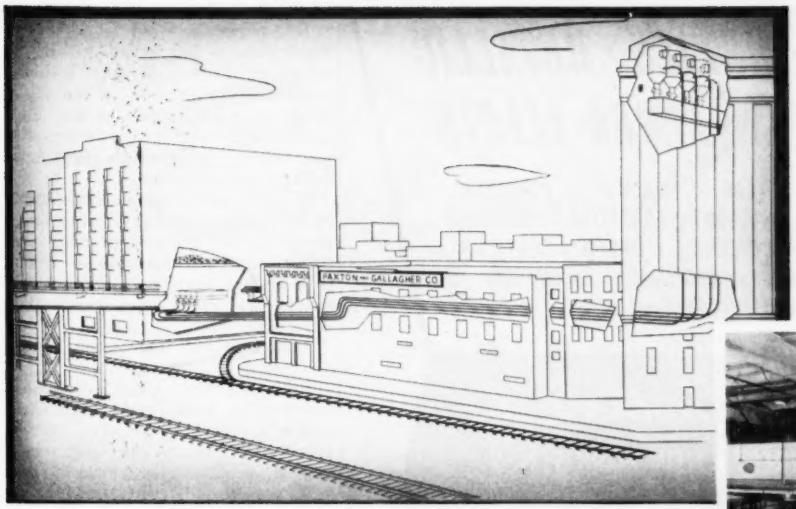
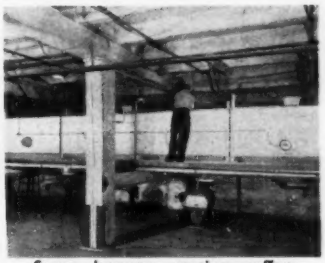
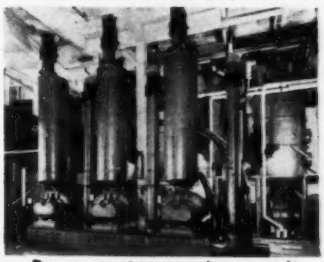


Diagram showing location of Dracco conveyor installation at Paxton and Gallagher Co., Omaha, Neb., which carries coffee from storage bins, over a rail siding and under a vehicle bridge, through three buildings and up to the receivers and roasters on the ninth floor of the final process building.



Surge hoppers receive coffee beans from blenders. Coffee is automatically fed from these hoppers into the conveyor system.

Trestle between buildings supporting conveyor pipes over rail siding and under vehicle bridge.



Dracco system receivers and vacuum pumps on the ninth floor of the final process building. Each of the pumps creates the vacuum used to transport 12 tons of coffee beans per hour.

Imagine trying to do this
ANY OTHER WAY!

THE CUSTOMER PROBLEM—To improve the slow and costly method of handling bulk coffee beans over a route that included (1) a four-floor elevator drop to a siding, (2) a hundred-yard rail haul, and (3) a nine-floor elevator lift to final processing equipment. The work included two loading and two unloading operations.

THE DRACCO ANSWER—A Dracco Pneumatic Conveyor now transports the coffee *automatically* at 36 tons per hour! It is carried through a completely enclosed sanitary system directly from the storage floor to the final processing machines.

THE RESULT—Slow manual and mechanical materials handling was eliminated, plant capacity was substantially increased, and operating costs were reduced to a minimum.

This cost-saving materials handling installation is typical of the modern technique of handling dry bulk materials with Dracco Pneumatic Conveyors.

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instruments as fast as we do—and a whole lot cheaper. Actually, I think you should say "almost" as fast . . . Too, you might emphasize that our tariffs are extremely low compared with those on our products going into most foreign countries.

We do produce instruments a little faster than our [foreign] competitors, for we have applied mass production—rather, American methods—to some parts of our instruments, but of course making and polishing a lens is the same, wherever . . .

And, I believe, our people favor . . . quotas on imports . . .

I suggest, too . . . that you might look into the priorities situation. Our makers are running out of materials all over the country . . . quotas are away down . . . dealers' stocks are almost non-existent—great stretches of barren shelves.

We believe all industry is going to be brought up short pretty soon in spite of all the yelling we have done to the proper authorities . . .

DONALD F. MCCAMMON
Scientific Apparatus Makers Association
Chicago, Ill.

With a Smile

TO THE EDITOR: In the hope that you can take it on the chin with a smile, I am herewith submitting a bit of light criticism. The mixing up of "who's" and "whom" is one of my pet peeves:

What you print is tasty stuff,
Palatable, new.
Last week's issue though, dear me,
Goodness gracious, whew!
Who To See In Washington
Hit me like a boom.
While you told us *who* to see,
Do you too know *whom?*

OTTO EISENSCHIML
Chairman of the Board
Scientific Oil Co.
Chicago, Ill.

A low bow to chemist-businessman-author Eisenschiml for (1) smoothly scanning poesy (2) catching CW grammatically off-base. "Whom" it was written, "whom" it was set in type, "whom" it would have appeared had not a "that-sounds-pedantic" editor, justifiably or not, deliberately slashed off the "m".—ED.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

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Celanese Solvent 601 is a low cost proprietory solvent containing methyl ethyl ketone, butylene oxides, and certain acetals. It is offered as a **cost saving replacement** for MEK to meet the requirements of vinyl and nitrocellulose solution formulators . . . lacquers and thinners.

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None other like it! No other refractory offers such an unusual combination of properties as new Norton Fused Stabilized Zirconia.

Its *resistance to high temperature* — its *low thermal conductivity*, despite its relatively heavy weight—its great *strength* at elevated temperatures—its resistance to *oxidizing and reducing atmospheres* at high temperatures — its *chemical inertness* — and its amazing *electrical resistivity* all combine to make a refractory that promises revolutionary advances in the processing field.

For Metal Melting

For processing precious metals in high frequency induction furnaces, Norton Fused Stabilized Zirconia crucibles or cement linings are ideal because metal does not wet them. This means that you can use the same furnace interchangeably without contamination of different alloys. What's more, Fused Stabilized Zirconia permits 100% recovery of melt from furnace linings. And you can depend on it for long life. It is unaffected by operating temperatures from 3200° to 3600° F. in metal melting furnaces.

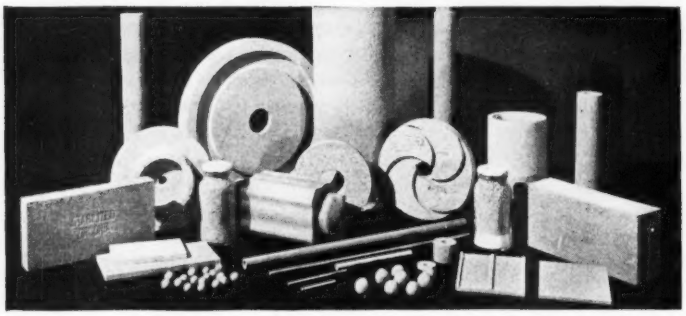
For processing ferrous alloys, too, the non-wetting property of Norton Fused Stabilized Zirconia permits its use in many pouring and melting operations.

For Chemical Processing

Fused Stabilized Zirconia is first choice on operations where excellent insulating and refractory properties are required, such as burner tunnels and furnace linings in combustion chambers. It withstands temperatures as high as 4500° F. In addition to its high temperature resistance, its low specific heat and low conductivity make it profitable on certain gas synthesis operations. Its chemical inertness also makes it valuable on certain types of processing where this property is important.

For Ceramics

Fused Stabilized Zirconia is highly recommended as setter tile for firing ceramic bodies such as barium titanate dielectrics and piezoelectrics, and some ferro magnetics. It does not react with or discolor ware. And its long life and thermal shock resistance make it particularly desirable for lining high temperature kilns and for fired shapes and grain in insulating all types of furnaces. It replaces carbon products in neutral and oxidizing atmospheres and is preferred for thermal insulation in molybdenum and platinum wound furnaces.



Some of the many refractory shapes made of Norton Fused Stabilized Zirconia are pictured here.

Write for further information

For complete data on further applications and detailed description of the new Norton Fused Stabilized Zirconia, ask your nearby Norton representative for Form 1409, or send coupon below.

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NEWSLETTER

Don't count on getting structural steel for plant expansion unless lack of your product is bottlenecking military production.

Steel, aluminum and armaments plants come first—along with other projects already under way. (The reasoning here: Failure to finish these projects would waste the steel that has already gone into them.)

Urgent defense needs come next, and after that it's a Solomon's choice. Badly needed schools and hospitals may well come ahead of civilian-slated chemicals; even stores and offices—normally in the back row when priorities are handed out—could rate special attention if they were required to serve an isolated defense housing community.

That's the steel outlook for at least a year—and the copper outlook is still darker. Ammunition rates above chemicals.

Distant ray of light: Later in the year the chemical industry will get a better break where copper or plate and structural steel aren't involved. Other forms of steel will sluice through trade channels in larger quantities, clearing production log-jams in their path.

Defense needs will worsen another pinch: technical manpower. The Atomic Energy Commission's proposed $5-6 billion expansion will require an additional 7,000 scientists and engineers, says AEC Chairman Gordon Dean. "There is a shortage of both . . . and they don't grow on trees . . . Somebody is going to have to be robbed."

There's some cold comfort in the fact that Canada is in the same boat. Canadian industry needs about 2,000 engineering graduates a year. Last year 2,450 got their sheepskins, but this year only 1,717 are counted upon. Next year the estimated figure is 1,450, and by 1954 the total may be only 1,200. The Engineering Institute's employment agency at Montreal has 300 unfilled and unfillable "situations vacant" on file.

Food, drug and cosmetic makers have until March 4 to request hearings on the proposed regulations Federal Security Administrator Oscar Ewing has issued under the Durham-Humphrey amendment to the Food, Drug and Cosmetic Act. The new law takes effect April 26, by which time they must add caution notices to labels on certain restricted drugs.

Keep an eye on the Federal Trade Commission's attempts to shape national economic policy through its administrative orders.

Its favorite tool right now is the proviso under the Robinson-Patman Act that allows it to set quantity limits on commodities, beyond which no price discounts can be given on account of quantity.

First application of the proviso was to the rubber industry—where FTC set 20,000 pounds of tires and tubes as the discount limit.

Reason for the proviso is to prevent monopoly. "Principle of the . . . proviso is that economies of mere size do not justify the risk of monopoly and its function is to avoid that risk by preventing such economies from being reflected in price."

Even if the aim is worthy, it gives FTC the power to upset normal operation based only on its own appraisal of "risk of monopoly."

Congress is beaver-busy readying a bill to beat the June 30 deadline when Government control over synthetic rubber expires.

Both industry and the Administration want private operation of the plants, but they differ on the timing. Industry wants it right now to spur expansion, particularly of butyl capacity; President Truman wants to retain control of GR-S rubber for at least two more years.

President Truman concedes the argument that Government control stifles butyl rubber expansion; that's the implication in his urging that Government-owned plants be turned over to private hands.

What and how much textile fiber subsidy to whom? Latest sector to be heard from is the wool industry, which asks for a loan program in addition to the 90%-of-parity purchase program.

Cotton price is now supported both by loan and purchase, and wool growers want the same. Chances are they'll get it, since Secretary of Agriculture Brannan is reportedly for it.

Two other wool growers' suggestions: (1) that the Munitions Board stockpile wool cloth when prices are low; (2) that something be done about South American (especially Argentine) competition.

Water fluoridation is getting a going-over from Delaney Committee probers (CW Newsletter, Feb. 2). Initial hearings were held Wednesday, February 13, and more are scheduled for February 19, 21 and 26.

U.S. Public Health Service men, among others, will testify. Fluoridation is the only subject currently on the agenda, but others may still easily be added if the Committee thinks it desirable.

Here's a Washington development of technical as well as business significance: The Army Chemical Corps will build a mercury-cell caustic plant. Although Government-owned, it will be privately operated, though there's still no indication who may be asked to run it.

There's no information on location or capacity, either; it's classified under security wraps until July.

Even less is known about Carbide and Carbon Chemicals Co.'s "plans" for plant facilities near the coastal town of Seadrift, Texas.

Reports from Texas talk about a 3,000-acre plant site, a $73 million plant. Carbide's Texas City employees and Seadrift merchants take it for granted that plans are well along, but the company is mum.

Monsanto's acrylonitrile plant at Texas City will be operating before the end of this year—earlier than was originally expected.

While capacity figures haven't been revealed, it's certain that the plant will turn out well over 30 million pounds a year. Chemstrand has contracted for that amount—as an intermediate for its acrylic fiber—and Monsanto hopes eventually to turn an additional several million pounds into Krilium (CW, Jan. 5).

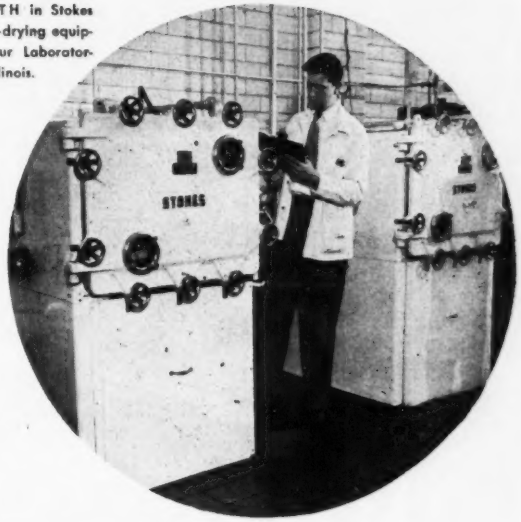
Results of two stock offerings last week confirmed Wall Street's high opinion of the chemical process industries' growth potential:

Monsanto's $39 million offering of common stock was oversubscribed, didn't suppress the selling price.

Owens Corning Fiberglas grossed $23 million in its first public stock offering—on a stock, which like Monsanto's, doesn't promise a large immediate return. This issue, too, was oversubscribed.

. . . The Editors

Processing ACTH in Stokes Vacuum freeze-drying equipment at Armour Laboratories, Chicago, Illinois.



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Vacuum freeze-drying – one of many modern techniques pioneered by Stokes and carried out commercially with Stokes equipment – captures life, defies oxidation, halts aging, preserves potency, for the benefit of mankind.

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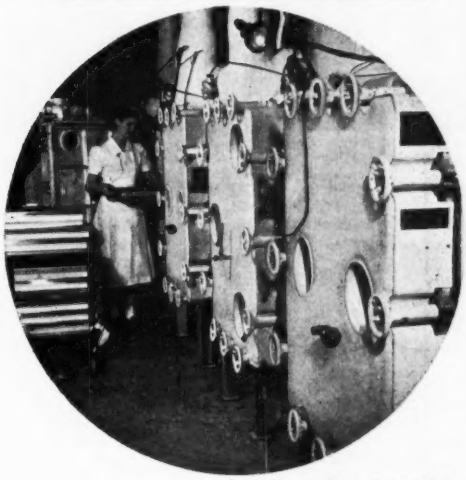

Vacuum freeze-drying of hog cholera serum at Pitman-Moore Laboratories, Zionsville, Indiana.

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- Strippable coatings to protect metal articles
- Cable, paper, and other special lacquers to prevent "blocking"
- Ceramic, molding compositions
- Plastic articles and films
- Abrasion- and water-resistant finishes
- Non-staining lubricant for rolling foil
- Textile spinning and throwing oils
- Special lubricants for mechanical equipment

•

Butyl Stearate is an important ingredient, too, in such products as lipsticks, shaving creams, vanishing creams, mimeograph stencils, and carbon papers.

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CSC

S P E C I F I C A T I O N S

Specific Gravity @ 25°C/25°C:	0.856-0.861
Acidity as Stearic acid:	0.5% max.
Color:	Water-white
Water:	No turbidity when one volume is mixed with 19 volumes of 60° Be' gasoline at 20°C
PROPERTIES OF COMMERCIAL-GRADE MATERIAL	
Molecular Weight	340-58 (calc.)
Density @ 20°C:	0.858 g/m 1, or 7.14 lbs/gal.
@ 25°C:	0.855 g/ml, or 7.13 lbs/gal.
Coefficient of Cubical Expansion	0.000 46 per 1°F 0.000 83 per 1°C.
Distillation Range @ 25 mm of Mercury:	220°C—225°C
Melting Point:	19°C, approx.
Heat of Fusion:	40 cal/g, approx.
Refractive Index, n_D @ 20°C:	1.444
@ 25°C:	1.442
Dielectric Constant @ 30°C:	3.12
Odor:	Practically odorless
Flash Point, Cleveland Open Cup:	374°F
Solubility @ 25°C:	Approximately 0.2 ml Butyl Stearate soluble in 100 ml water. Approximately 0.03 m water soluble in 100 ml Butyl Stearate

INDUSTRIAL CHEMICALS DIVISION

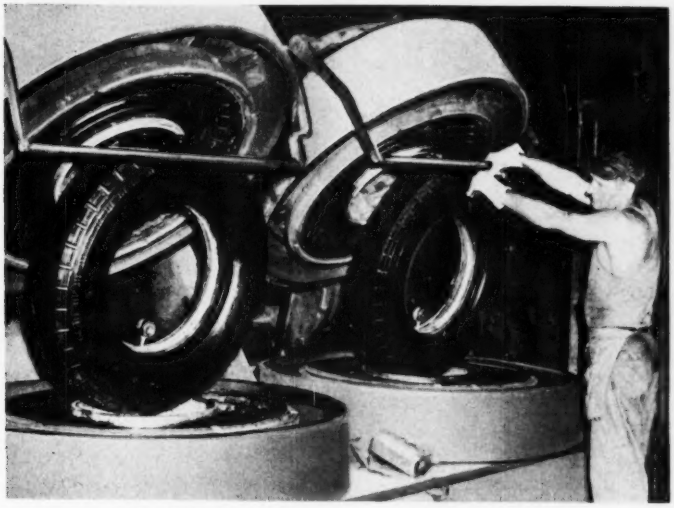
COMMERCIAL SOLVENTS CORPORATION

17 East 42nd Street, New York 17, New York

February 16, 1952 • Volume 70 • Number 7

Chemical Week

BUSINESS & INDUSTRY . . . . .



SILICONES: For a "super" era, "super" materials.

New Phase for Silicones

Current silicone expansions reached the $18 million total last week as Dow Corning added a $10 million project to three ($3 million) already on its schedule. The other big producer, General Electric, is putting $5 million into its plants.

Military applications and defense-vital industrial needs are the spur. But unlike their toddling World War II days, silicones now have solid peacetime markets in many industries.

Dow Corning calls its latest investment in silicones, a thumping $13 million *(CW Newsletter, Feb. 2)*, the "beginning of a new phase" in its silicone development.

This rings of a new process to make or new ways to use silicones. But it is neither. What the company is saying is that these materials with an almost fabulous resistance to heat, cold, water, wear, etc. have tossed off their swaddling clothes, are now well established industrially, and will be available in substantial quantities to take care of military and peacetime demands.

There is concrete evidence that the other leading silicone producer, General Electric, concurs: It is expanding its Waterford, N.Y., plant to the tune of $5 million *(CW Newsletter, Jan. 5)*.

DC's expansion at Midland, Mich. is with the benefit of DPA-approved certificates of necessity. The last one granted, for $10,194,000, is largely for facilities to increase production of basic intermediates that are processed into materials for specific applications. Three other certificates allowed last year covered metallic silicon ($560,000), methyl chloride ($820,000), and silicone rubber ($1,460,000) plants. Construction, already started, is slated for 1954 completion, though individual units will be in operation before then.

Within the Walls: GE's expansion currently differs in at least two respects. No new buildings are being added; the work involves installation of more—and more efficient—production equipment in the existing works. And there has been no mention of certificates of necessity by either GE or DPA.

Neither of the two other silicones producers—Plaskon Division (Libbey-Owens-Ford) and Linde Air Products—is blossoming out anything like DC or GE. Plaskon entered the field in late 1949 with four chlorosilanes, is still pushing them as well as its more recently introduced coating resins. While expansion of its Toledo unit undoubtedly is in the offing, there is nothing definite on when or how much.

Linde, which wet its feet in silicones with research samples of silanes in 1948, has expanded its Tonawanda, N.Y. semi-works unit every year since, and 1952 will be no exception. It has introduced a number of standard oils, resins, fluids; is pioneering with vinyl silicones. These are valuable in glass sizing to bond polyesters to glass for airplane structures, and Air Force specifications are being redrawn to cover such glass-polyester laminates.

Linde will continue this kind of exploration as it boosts its stake in the field. It has plenty of land around its Tonawanda Labs, may bust out one day with a substantial challenge to oldtimers DC and GE.

Prosperous Union: Of the two veterans, DC is the older, having been formed in 1943 by Corning Glass Works and Dow Chemical Co. to make silicones* for the armed forces. Corning Glass brought its knowledge of silica chemistry from the glass industry and basic silicone research data to the union; Dow's principal dowry was its organic chemical processing know-how, its chlorine and magnesium.

During the war, Dow Corning 4 compound was the biggest by far of those produced. Its major use was waterproofing ignition parts, principally of airplanes, although it was used on radar too. A fair quantity of a basic polysiloxane, Dow Corning 200, found application as a damping fluid for instruments. Some electrical insulating varnishes and a little rubber were also made.

With V-J Day, however, these war outlets folded, and the company had to build up industrial applications. It required about a year to take up the slack, and silicones went on from there.

How well DC has done is shown by the record: There has been an approximate doubling of capacity every three years. The current project

* Dow Chemical actually was producing and packaging one silicone, Dow Corning 4, under that name 6 months before the joint company was legally incorporated.

is about twice as large as any previous one.

Industrial Picture: Up to now, DC has three leading products volume-wise:

- A fluid (Dow Corning 200) which has three major uses: (a) polishing agent for cars and furniture; (b) emulsion for mold release in the rubber industry; (c) miscellaneous damping, hydraulic, etc. liquids.
- Silicone rubber, which, because it can stand a very wide temperature range, finds wide use in aircraft for engine gaskets and seals, bay door seals, etc. Used for electric cable, it permits a 50% reduction in weight and size of insulation, resists extreme heat, at worst turning to silicon dioxide, itself an insulator. This the Navy prizes, for ship communications are not shorted out by fire.
- Electrical insulating varnishes and resins which are long-wearing*, virtually eliminating down time of motors.

Among other applications are lubricants, water repellents, greases and antifoaming agents.

Picture at GE: The pattern of markets General Electric, which brought in its first plant in 1947, has developed has been similar. In addition to the number of silicone products the company sells, it is also offering some basic intermediates, is planning more effort in that direction in the future.

A good deal of present expansion is clearly for military uses, but industrial applications should provide non-defense outlets. General Electric's production, for example, is about 60% for defense purposes; however, the company has a firm industrial market to cushion any let-down from that quarter—unlikely for some time anyway. Silicone rubbers will take a good share of the new capacity, but that means expanded intermediates that can be funnelled into other uses should the future so dictate.

And greater production will bring lower prices, put silicones within reach of more users with less critical requirements than the armed services. GE prices on two products show the downward trend: Silicone oil (one-drum lots) was $5.70/lb. in June, 1948; today, it is $3.80. A 35% mold-release emulsion was $2.25 in June, 1948; today a better product is $1.65.

The $18 million going into new facilities presages a greater sales push for established silicones, increased attention to new products with special properties to meet the exacting demands of today's industry.

* The British, known for building-to-last, have wired the House of Commons with silicone-coated wire.

NPA's BELSLEY: Thumbs up on Government-industry cooperation.

Keeping NPA's Feet on the Ground

In the nebulous nirvana that is Washington, administrators of many Government bureaus have been accused of keeping their heads in the clouds. But NPA, for one, is keeping its feet on the ground.

Kingpin in this grounding operation has been able and scholarly G. Lyle Belsley, NPAssistant administrator who steers the 500-plus industry advisory committees set up under the agency's aegis.

Says Belsley: "If our job is to be done wisely and effectively, we must have the continuing advice and help of men most familiar with industry—the people who are directly affected by our actions."

Last week, telegrams from Belsley went out to members of the carbon bisulfide and the flexible plastic container committees summoning them to Washington to discuss the problems of their industries.

All in all, NPA has close to 7,000 industrial executives serving on these committees. In the chemical field, NPA has established 41 groups, on which membership totals 469.

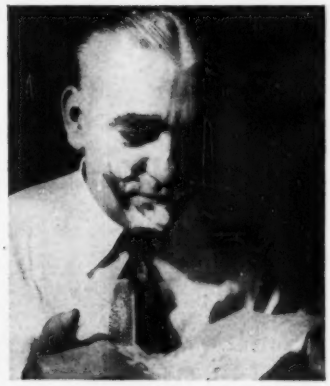
Overall policy group for the chemical industry, for example, includes 10 men—from Allied, Alcoa, Du Pont, Harshaw, Devoe & Raynolds, Freeport Sulphur, Mathieson, Davison, Phillips Chemical and Dow. The men were appointed by Belsley on recommendations of NPA's chemical division.

Since term of membership on the committee is limited, and since attending the meetings does not prevent carrying on one's normal work load, NPA has little trouble obtaining committee members. (Contrast: The agency has difficulty getting executives loaned to it for a six-month period.)

Anti-Trust Questions: Of course, the committees do nothing which might be construed by the Justice Department as violating the Sherman Act. By definition, the committees exist to advise the Government. They may discuss any subject concerning their industry and the defense effort, furnish information and render advice to the agency.

They cannot, however, undertake to determine policies for the chemical industry, nor can they compel or coerce any person to comply with NPA's regulations. On the other hand, NPA still makes the decisions, and may reject any and all advisory committee suggestions.

NPA has, as much as possible, tried to avoid the rubber stamp stigma in



No Job for a Robot

MACHINES BULK LARGE in modern industry, but the most sensitive machine can't replace the human nose. While it is natural to need a knowing nose in, say, the essential oil business, educated proboscises are comparative rarities in the petroleum field. Esso Standard's Milton Hays' is one of these few. Hays has spent 41 years at the company's Bayonne, N.J., refinery abstaining from garlic and dodging head colds in order to (1) whittle off shavings from a wax sample, (2) bury his nose, sniff, and (3) come up smiling from a sample that doesn't smell of gasoline, anathema in wax for food packaging.

its relations with the committees.* While an agenda is prepared for each meeting, there is no limitation to discussion of any subject brought up by industry members.

The smooth running of NPA's groups has largely been attributed to Belsley's skill as a career civil servant. Incidentally, he won the 1937 Junior Chamber of Commerce distinguished service award for his contribution to government administration.

Continuation and extension of the industry advisory system will, Belsley hopes, aid NPA in increasing its efficiency:

"We have felt that the advice and recommendations of the committees are of inestimable value. They have proved a highly satisfactory device for Government-industry cooperation in the defense program.

Friend in Need

To the average American, RFC at one time meant "mink coat," but to those in the chemical industry, RFC is better known as the sole buyer of natural rubber and tin and as the agency charged with running the synthetic rubber program.

But in addition to these tasks, RFC is also a banker to the chemical industry. While not a big lender to those companies with billions in assets, it has loaned quite a bit to chemical firms, mostly under provisions of the Defense Production Act.

Loans under this act—defense loans—are one of two ways in which RFC can lend money. Alternate method is under the RFC act, where the money is given out as a business loan or as a disaster loan. In many cases, RFC is asked to lend when bank financing isn't available.

W. Stuart Symington, who has been administrator of the reorganized RFC, has agreed to stay on as head of the agency until his successor—Harry A. MacDonald—can be confirmed by the Senate. MacDonald has served as head of the Securities Exchange Commission.

Reason Needed: One of Symington's first acts when he took over the agency at its time of need a year ago was to initiate a policy of making public the reasons why any loan was made, whether under the RFC act or under the now-more-popular defense legislation.

One of the biggest loans made during the past year was $2.1 million (10 years, 5% interest) to Shea Chemical Corp., West Chelmsford, Mass. A bank is carrying a tenth of the loan. Reason for the loan: construction of plant and purchase of equipment to manufacture agricultural specialties. The project received USDA certification as essential.

Brush Beryllium of Cleveland received $800,000 last December. The loan, again 10 years at 5%, will be used to buy land and erect a plant in which the company will make a 4% beryllium master alloy. The Defense Production Administration was the certifying agency in this case.

Reichard, Coulston, Inc., of Bethlehem, Pa., received $460,000 last July, which runs eight years at 5%. The firm manufactures dry colors, including synthetic yellow oxide used in production of olive drab paint. Money was scheduled to be used to enlarge buildings, purchase equipment, pay other indebtedness and to supply working capital.

Contract Completion: Two companies, in the midst of carrying out government contracts, ran short of working capital. Continental Soap, Chicago, received $25,000 at 5% for 6 months, and Sure-Seal Corp., Salt Lake City, $13,784 at 5% for 60 days to complete its contracts for refining wax.

Cosden Paint Co., Beverly, N.J., received $23,000 at 5% for a six-year period, with a local bank participating on one-third of the loan. Purchase of new machinery and equipment and retirement of existing indebtedness were the reasons for this loan.

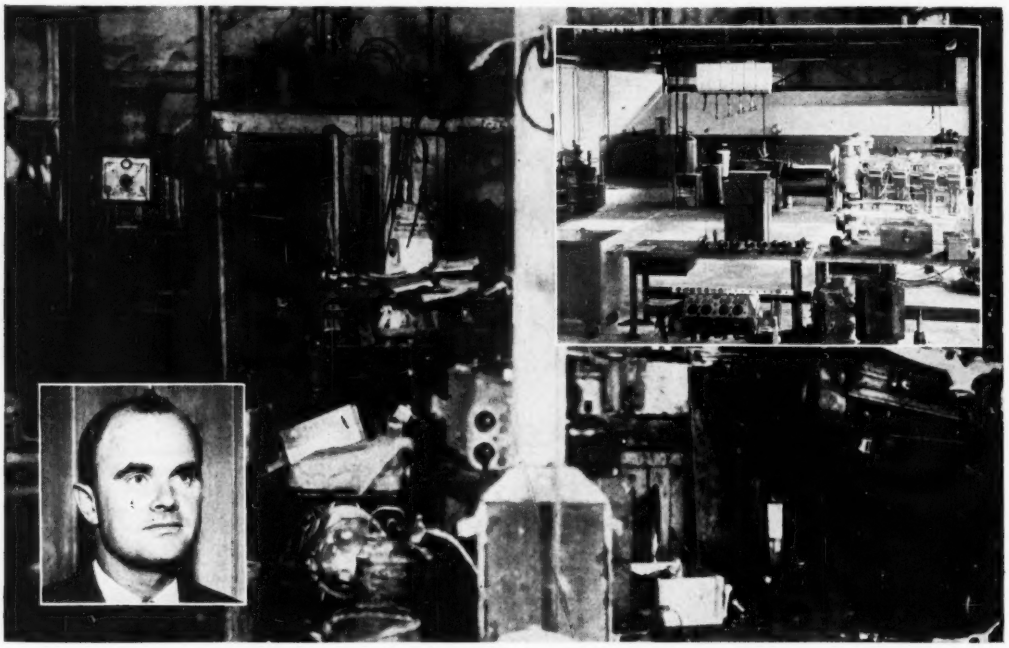
A loan of $75,000 for 5 years at 5% was granted to the Pacific Powder Co. of Tenino, Wash., which makes commercial high explosives.

Less Business: RFC's loan applications have fallen off during the past few months, chiefly as a result of unfavorable publicity resulting from investigations of the agency last summer.

In fact, there is still Congressional pressure to abolish the agency concurrent with the departure of Symington. But because of his housecleaning, this move most likely won't succeed.

In the meanwhile, it is doing business at the same old stand.

* Seven of nine members of OPS's tallow industry committee resigned in a huff for allegedly being asked to merely give lip service to an OPS regulation *(CW, Dec. 8)*.



IMC'S TOM WARE: "Before" to sell a proposal; "after" to remove doubts.

Graphic Arts Sell Ideas Fast

The "see" in contemporary life isn't confined to television and picture magazines. You can use photographs, models, other props to sell ideas to your boss, the board of directors. Making them "see" proposals is vital now because it saves time and money, gets action.

Tom Ware, chief engineer of International Minerals and Chemical Corp., is a leading exponent of visual aids in place of wordy reports. IMC's board of directors agrees with him, recently "bought" a lab modernization and a new shop "sold" by Tom.

One lab sorely needed enlarging and modernizing but written reports had failed to win an appropriation. A single picture of its crowded and cluttered interior showed that improvements were obviously needed, and an immediate o.k. was forthcoming. Just to make sure the board didn't belatedly doubt the wisdom of its action, Ware followed up with a picture of the new lab placed side-by-side with the "before" shot.

Models and Cart Wheels: Another skeleton in the closet was a converted two-car garage serving inadequately as a shop for 65 trucks used on one of its Florida mining properties. A picture of dangling blocks and tackle, piles of equipment on work benches and floor, dirt and grease bought the nod for a decent shop.

But a little extra selling was needed to relocate the service center. A model of the 20-mile terrain of the mines was built. Silver dollars stacked at various mines showed better than figures the cost of a long haul to the "side pocket" location of the old shop. Result: The new shop went up in the center of things.

The same terrain model sold the idea of a central radio station for contacting outlying points of the far-flung (3 mi. x 7 mi. strip) operation. Where days were formerly lost in contacting supervision, a short confab on the radio-phone installed in the operating staff's cars now gets decisions on ideas while they're fresh.

Another model sold a mechanization move after reports and even charts had failed. Figures of workers were placed in position in a plant mock-up. Four of the seven were removed with a remark that that was what mechanization would mean. The remaining three figures were an irresistible argument for economy—the idea sold.

Meter Ticks $$$: IMC's top management likes to make such "graphic" decisions. The board finds them idea-provoking, conducive to sound judgment. Moreover, photos and mock-ups bring a job site into the board room, save trips to plants by high-salaried executives.

Many props—aerial photos, for example—show railroad tracks and other details better than any other means. And progress charts keep management posted on how much of a job is completed, team up with current photos to make figures come to life.

Trade Tricks: In preparing presentations, Tom advises, make them neat, and make them big so they're seen by everyone. Headline the key point in a poster, using color for emphasis. Captions and phrases can direct attention to side issues; supplementary details can be slipped in verbally while the main point is being studied.

For the final polish that puts an idea across, the experience of professional photographers, commercial artists and advertising men is invaluable. Their familiarity with techniques of humanizing and simplifying concepts can slash a page of prose down to a sentence or a sketch.

Rough scale models can be easily made from wood and plastics. Pre-

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cision models with colored wire piping can serve triple-duty: After use in the board room, they are designs aids in the engineering department, will be shipped to the plant later for use as maintenance guides.

And even if a prop doesn't have utility beyond its primary selling function, Tom Ware is convinced that it more than pays for itself that one time. For top executives, like everyone else, can understand graphic presentations more quickly than written arguments, can size up a problem and reach a sound decision in less time.

Glass Paper

Fibers of glass are used as raw material for a new paper-like material which may find use in filtering air, gas and smoke.

Originally developed by the National Bureau of Standards and the Naval Research Laboratory, the process now has been commercialized by the Merrimac Paper Co., of Lawrence, Mass.

Commercially available fine glass fibers are mixed with water and run over a paper machine, producing the paper. No additives or binders are used. Merrimac has produced, on a commercial scale, paper as thin as .002 in.

Chemists Certified

First clinical chemists to be certified by the American Board of Clinical Chemists number 47. The ABCC was conceived by men in the hard-to-define areas of work in medical chemistry to establish standards for their profession. These certificates represent the considered opinion of the board as to the qualifications of the 47 men.

Estimates of the number of men working in clinical chemistry vary from 1,500 to 3,000, depending on whether fields like toxicology are included, Board Secretary Joseph Harrisson said. Certificates are issued now to those who have requested applications from the board, have completed these, and who have been deemed qualified on their experience and education. After July 1 of this year, certificates will not be issued without applicants' passing examinations set up by the Board.

At present, only two states—California and Pennsylvania—are licensing clinical labs, and California alone is licensing personnel.

LABOR . . . . . .

Employee Retirement: Harshaw Chemical Co., Cleveland, has amended its employee retirement plan. The new setup, approved by the AFL International Chemical Workers local, figures retirement pay based on an average for the last ten years instead of from January, 1937.

•

Automatic Increase: A feature of the new contract between the Permolite Co. and the CIO Chemical Workers is an automatic wage increase on June 22 in whatever amount is due the workers under a cost-of-living escalator clause. The new contract also provides for an 8¢-an-hour general wage increase (4¢ of which is retroactive to last Nov. 22), night-shift differentials of 5¢ and 7¢ an hour, and check-off of union dues.

•

Gather Together: Officials of the CIO Chemical Workers at Sarnia, Ont., are claiming that a large percentage of the workers in Canadian Synthetic Rubber Co.'s plant have signed up with the union and affiliated with

Patent Bargain Day

While the Justice Department's Office of Alien Property was preparing to sell the stock of Schering Corp., seized German pharmaceutical manufacturers (CW Newsletter, Feb. 9, et priori), manufacturers who weren't interested in buying stock were still looking with interest at the company's properties.

Bulking large in company assets have been its patents, all of which granted before April 20, 1942, now have been released for use by American manufacturers on payment of a $15 service fee.

In the following list, these Schering patents are classified into types, according to the titles of the patents. (Patents classified under such general titles as "Pharmaceutical Product" are not included.)

Calcium thiosulfate
2,198,642

X-ray contrast agent
2,269,489

Diacyl isothiocarbamide ether
1,667,052

Acylaminoacid
2,160,413

Halogen substitution
1,645,974

Cyclohexanol der.
1,696,782

Ketones
1,737,203 1,892,011 1,974,727

Catalytic alkylation
1,908,190

Substituted acetamides
1,967,388 2,186,976

Acid nitriles
1,828,267 1,876,652 1,958,653

Iodomethylsulfonic acid
1,867,793

Dihydroxydiphenylmethane
1,593,080 1,593,081 1,778,858

Alkyl cumaranes
1,679,664

Phenol/Alkylphenol der.
1,771,089 1,798,813 1,822,062 1,854,940
1,782,621 1,805,555 1,835,344 1,901,824
1,782,966 1,816,286 1,838,454 1,995,402
1,784,599 1,816,287 1,848,665 2,054,270
1,788,847

Hydroaromatic alcohols
1,857,880

Acylophenone
2,116,104

Polycyclic alcohol der.
2,192,935

Oxyindole der.
1,587,038 1,592,386 2,230,233

Guanidine, der.
1,672,378 1,737,192 1,795,738 1,967,400
1,672,431 1,785,916 1,805,889

Pyridine, der.
1,706,775 1,793,683 1,950,543 2,226,111
1,723,457 1,870,203 2,190,444

Thymol, cymol, der.
1,747,604 1,786,922 1,865,544 1,886,311
1,768,257 1,812,561 1,876,435 1,902,904
1,784,598

Quinoline, der.
1,804,045 2,064,297 2,138,628 2,220,086
1,846,321

Pyramidone
1,798,374

Cresol, der.
1,696,769 1,927,136 1,933,775 1,961,397
1,830,859

Heterocyclic azo der.
1,862,361 2,145,579 2,156,141

Cyclic cyano comps.
2,068,586

Arsenic pharmaceuticals
1,616,144 1,642,830

Metal mercapto acids
1,527,951 1,683,104 1,689,366 2,006,003
1,633,626 1,683,105 1,784,497 2,036,208

Organoauric comps.
2,166,133 2,197,795 2,186,694

Phenylmercuric nitrate
2,173,845

Menthol, der.
1,625,771 1,765,620 1,776,669 1,879,767
1,629,002 1,773,500 1,776,670 1,904,545
1,672,346 1,776,087 1,776,671 1,916,742
1,704,630 1,776,088 1,793,020 1,921,138
1,706,784 1,776,667 1,797,612 1,946,115
1,718,666 1,776,668 1,802,055 1,999,061
1,732,272

Camphor, der.
1,672,000 1,755,752 1,838,465 1,908,064
1,755,750

Alkaloid salts
1,717,585

Chelidamic acid, der.
1,869,672 1,919,417 1,944,412

Terpenes, der.
1,811,868 1,838,456 1,967,430 1,996,558

Hormones, steroids, gen.
1,695,612 2,046,656 2,180,095 2,232,735
2,001,255 2,054,271 2,184,775 2,236,574
2,012,300 2,073,354 2,225,662 2,264,861

Cyclopentanoperhydrophenanthrene
2,076,098 2,224,856 2,249,748 2,257,137
2,119,515 2,225,419 2,251,939 2,265,143
2,184,299 2,243,887 2,254,407 2,266,778
2,186,906 2,248,954

Anterior pituitary
1,857,878 1,868,095 1,928,830 2,085,768

Androgens
1,907,591 2,182,825 2,189,130 2,232,734
2,015,099 2,188,881 2,200,307 2,267,759
2,175,220

Germ gland hormones
1,916,478 2,094,045 2,106,763 2,223,393
2,075,868

Estrogens
2,000,117 2,136,397 2,221,340 2,265,976
2,112,712

Follicle hormones
1,966,752 2,060,312 2,086,139 2,154,272
2,033,487 2,064,114 2,096,744 2,178,109
2,039,414 2,071,803 2,103,735 2,184,167
2,047,307 2,071,804

Pregnane, der.
2,151,661 2,170,124 2,238,955 2,256,500
2,153,700 2,232,438 2,239,742 2,258,131
2,160,719 2,237,410

Thyroxin, der.
2,252,230

Glutathione
2,209,299

Keratin der.
2,236,921

Choline, der.
2,136,401 2,150,885 2,156,275 2,238,936

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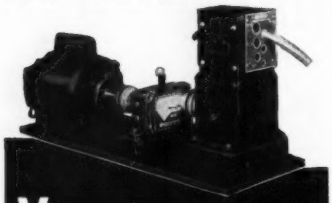

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the local at the nearby Polymer Corp. plant.

The move is an obvious attempt to gain greater strength by having one local instead of two, since Polymer recently absorbed the Canadian Synthetic Rubber Co.

•

Rubber Walkout: A walkout of the members of the United Rubber Workers (CIO) local at Kentucky Synthetic Rubber Corp., Louisville, has occurred after 4½ months negotiations on a new contract. Reasons: wages and a union shop contract.

Union officials conferred with the Federal Mediation Service soon after the strike began. The company has so far rejected the union's demand for a flat 15¢-an-hour raise, offered a 9¢ across-the-board hike with a fully company-paid health and welfare plan.

•

New T-H Tactics: Washington sees a change in the tactical maneuvering of the big unions against Taft-Hartley. Politically the shift will not be apparent—the same strong words will be bandied about as before—but on the practical end, the unions, not being able to get repeal, are going to be content to nibble away at it. A bill is already in the Senate which would set up a closed shop for printers, but could be extended to other crafts, and another bill is under way which would set up a closed shop in the construction industry.

•

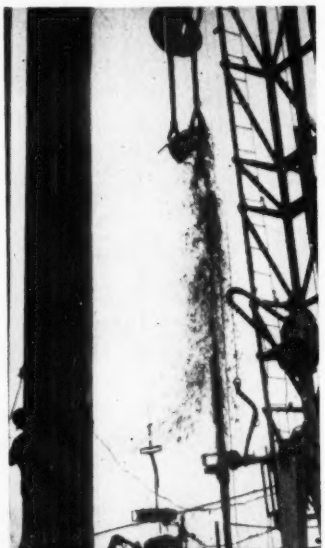
District 50: Consolidated Chemical Co., Baton Rouge, La., has negotiated a new contract with its District 50 local. The pact provides for 4¢ general hourly wage increase, double time for work in excess of 16 hours in a day, additional meal allowances, and shift differentials from 5¢ to 7¢ per hour for two non-shift periods.

•

Picket Line Ignored: Signs are beginning to appear at Paducah, Ky., atomic energy installations of the effectiveness of the recent pact by labor and management to submit all disputes to the Atomic Energy Labor Relations Panel before a walk-out.

When fifteen AFL Laborers members formed a picket line at the main gate, all other craft union members, and most fellow AFL Laborers, crossed it to go to work. The pickets then abandoned the line when told by their international vice-president that their strike would not be authorized.

Later in the same day, 35 AFL Ironworkers walked off the job, but the rest of the 650 Ironworkers employed stayed on and the dispute was referred to the union's St. Louis headquarters.



Gusher No. 1

ALABAMA'S first oil gusher blows in at the Brewton field, near Brewton. While oil has been extracted in the state for nearly a year, primarily at a field near Gilbertown, the new find is expected to produce a crude of a significantly better grade. Well owner is Humble Oil.

EXPANSION. . . .

Phenol: Reichhold Chemicals is planning two increases in its phenol production. At Tuscaloosa, Ala., DPA-certified expansion costing $1,475,000 has begun. The tab is estimated at $5 million for a plant on the ship channel near Houston, Tex., located near the Diamond and Shell Chemical plants in order to be near sources of glycerine and caustic.

•

Sulfuric Acid: On the heels of its phenol expansion (*CW Newsletter, Feb. 2*) Monsanto is joining Tide Water Associated Oil in a 250 ton sulfuric acid plant at Avon, Calif. Raw material waste sludge and hydrogen sulfide from Associated's refinery will be converted to a water-white acid by the Monsanto-Ross-Wilde process.

•

Graphite: Production is expected to reach full scale by May, 1953, from expanded facilities ($10 million) for graphite electrodes at the Niagara Falls plant of International Graphite

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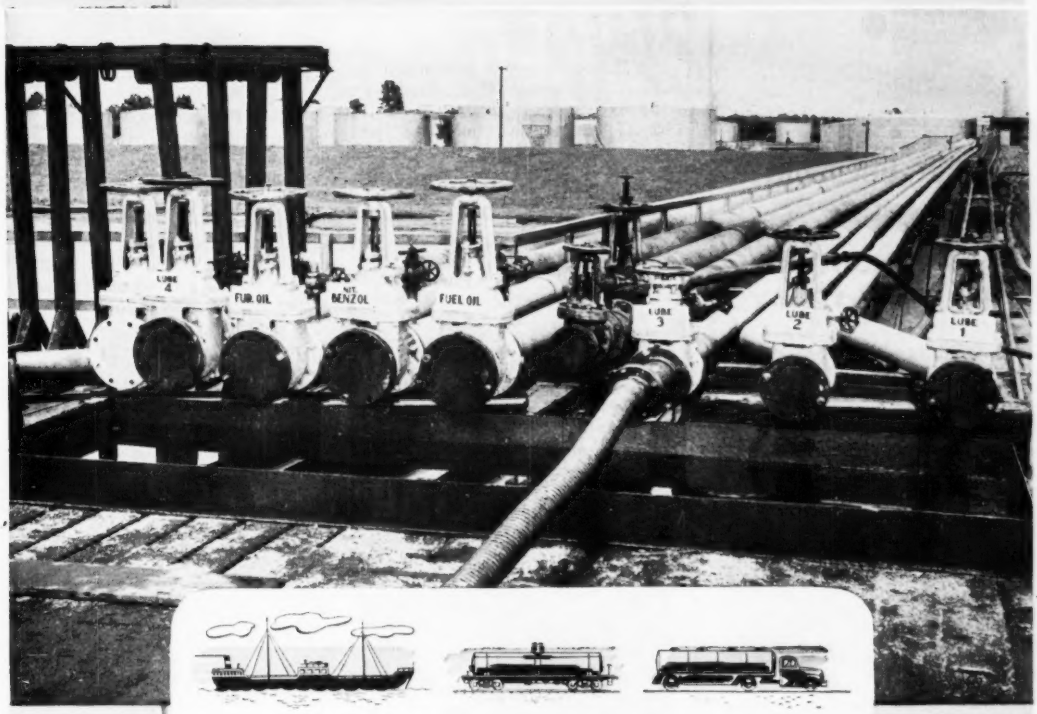
General American can handle it for you!



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METALLOY CORP., Division
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and Electrode Corp., Speer Carbon subsidiary.

●

Plasticizers: Pittsburgh Coke & Chemical will expand present semi-works plasticizer production to full commercial operation when a new plant is completed in June. Production will consist of phthalates, sebacates, adipates and tetrahydrofurfuryl alcohol oleate.

●

Alumina: Canada's Aluminum, Ltd. is planning to spend $20 million to expand production of alumina from 200 to 500 short tons daily in facilities on Jamaica, and later will boost this to 740 tons. Most of the alumina will go to the new British Columbia smelter being built by Aluminum Co. of Canada, Ltd.

First shipment of alumina from Jamaica is expected in July, with production from the smelter expected early in 1954.

●

Sulfur: Jefferson Lake Sulphur and Shell Oil have signed a contract giving Jefferson sulfur rights to Shell's Black Bayou Dome in Cameron Parish, La. Jefferson began drilling exploration shafts this week. Frasch process will be used in extraction.

●

Calcium Carbide: $7 million will be the tab that Shawinigan Chemicals, Ltd., will pick up on a new carbide plant at Varennes, near Montreal. Capacity is estimated at about 100,000 tons per year.

●

Alkylate: A 1,150-barrel-per-day alkylation plant (sulfuric) and a 5,000-barrel cat cracker (fluid catalytic) are planned by Lion Oil in a $5 million expansion at its El Dorado, Ark., refinery. New units are expected to go into operation late in 1953.

●

Abrasives: Output of two plants of the Exolon Company will be upped when present expansion is completed. A total of about $400,000 will be used to add new furnace equipment at Thorold, Ont., which will increase production of fused aluminum oxide about 60%.

A total of about $262,500 will be spent at the company's Tonawanda, N.Y., facilities, primarily for debottlenecking present production. Estimated output increase here is 15%.

Bottle Barrage

POLYETHYLENE BOTTLES carrying a message of democratic hope are being floated coastwise to those in communist-dominated China. Plax Corp. provides the bottles; students at Lenoir Rhyne College (Hickory, N.C.), the message. Bottle legend: Inside you have good news.

COMPANIES . . .

St. Joseph Lead: The board of directors will ask stockholders to approve increase of authorized capital stock from the present $25 million to $50 million. The stock would be unissued, but available if purchase of new property or expansion of company operations necessitated raising new capital.

●

General Tire & Rubber: A 2-for-1 split has been voted by the company's directors, subject to stockholders' approval. Par value would be halved from the present $5.

●

Phillips Chemical: A standby credit of $50 million has been arranged for future expansion. Included: financing of ammonia-methanol-petrochemical production near Houston (to have been built by Alamo Chemical), and expansions in sulfur, carbon black and pyridines.

●

Consolidation: Two New Jersey firms, H. V. Walker Co., Elizabeth, and Aula Chemical Co., Jersey City, will consolidate facilities at Walker's property in Elizabeth.

●

Alcoa: The company's $125 million issue of 3.125%, 12-year sinking fund debentures (*CW, Jan. 26*) was oversubscribed.

●

American Marietta: Stockholders have approved a 2-for-1 split of both classes of common stock. The 513,903 shares of common and the 700,000 shares of class B common outstanding, each with a $2 par value, will be doubled

PICCOUMARON

Para-Coumarone-Indene

RESINS

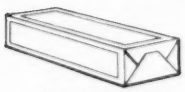
A GROUP OF THERMOPLASTIC SYNTHETIC RESINS USEFUL FOR:

PAINTS

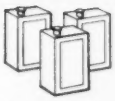
INKS

WATERPROOFINGS

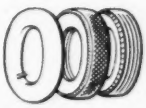
CONCRETE CURING



CHEWING GUM

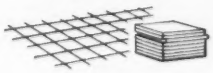


VARNISHES



RUBBER COMPOUNDS

ADHESIVES



FLOOR TILE

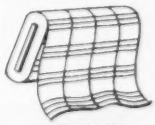
WAX COMPOUNDS

LACQUERS

ANTI-RUST COATINGS

CEMENTS

HOT MELTS



TEXTILES

The applications shown above indicate some of the almost endless uses for this excellent resin.

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NO. 2
OF A SERIES
ON HOW TO

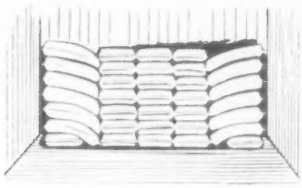
Stretch a MULTIWALL Paper Bag

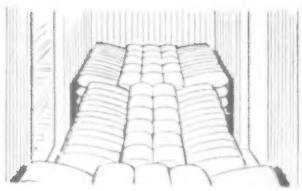
It is just good business to get the best possible use from your multiwalls. Here is one way to do it . . .

PROPER CAR LOADING

PREPARATION IS IMPORTANT

Cars should be clean, dry, and free from protruding nails or other projections. Remove all dirt, dust, rocks and grit. Remove loose nails and cover loose bolts with cardboard or several thicknesses of car liner. (Picture shows how to use straight-edge board to locate protruding nails, etc.). Cover floor (and walls, if necessary) with good grade of car liner and put at least three thicknesses on door edges. Use asphalt-laminated paper to seal door cracks.





FOLLOW THESE LOADING RULES:

1 The car should be loaded so that the filled bags will not come in contact with side doors. **a.** Use a good grade of dunnage in the doorway or steel strapping covered with corrugated board. **b.** Follow proper loading patterns. (Illustrated.) **c.** Use retaining strips of special Scotch tape applied across the load, or steel retaining straps covered by one thickness of corrugated board.

2 Bags should be loaded tightly, solidly and flat, to minimize shifting.

3 Balance the load from end to end and side to side. There are, in general, three loading methods—crosswise, brickwall and lengthwise. Crosswise is generally preferred. Loading in car doorways should be done so that this part of the load acts as a keystone between the end loads. (See illustration.)

Want the Whole Story?

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in number, but the $2 par value will stay the same.

•

Koppers: Approximately $12 million will be raised by the company through sale of 250,000 shares of common stock, according to a registration statement filed with the SEC. The underwriting syndicate is headed by First Boston Corp. The money will go to finance most of the company's 1952 expansions, which include construction of ethylbenzene facilities at Port Arthur, Tex., expansions at Kobuta, Pa., Fontana, Calif. *(CW, Jan. 26)*, and Oil City, Pa.

•

Homestead Mining: The Reconstruction Finance Corporation has lent $240,000 to this Platteville, Wis., zinc-lead ore processor on a DPA loan. The money is to be used for equipment and working capital.

FOREIGN. . . . .

Uranium: Heavy traces of uranium have been found in the Coquimbo Province nitrate mines of the British- and Chilean-owned Tarapaca Antofagasta Nitrate Co. The discovery is expected to result in early enactment of a bill now before the Chilean Congress to nationalize all uranium deposits. Meanwhile uranium prospecting in other Chilean provinces is being intensified.

•

Philippine Financing: Salvador Araneta, Economic Administrator for the Philippines, is seeking his government's approval for a new plan to put steam behind the republic's sagging industrialization program. The idea is this: Taxes on foreign exchange, now 17%, would be hiked to 25%. This additional 8% would then be allowed to accrue to a special fund dedicated exclusively to industrial development.

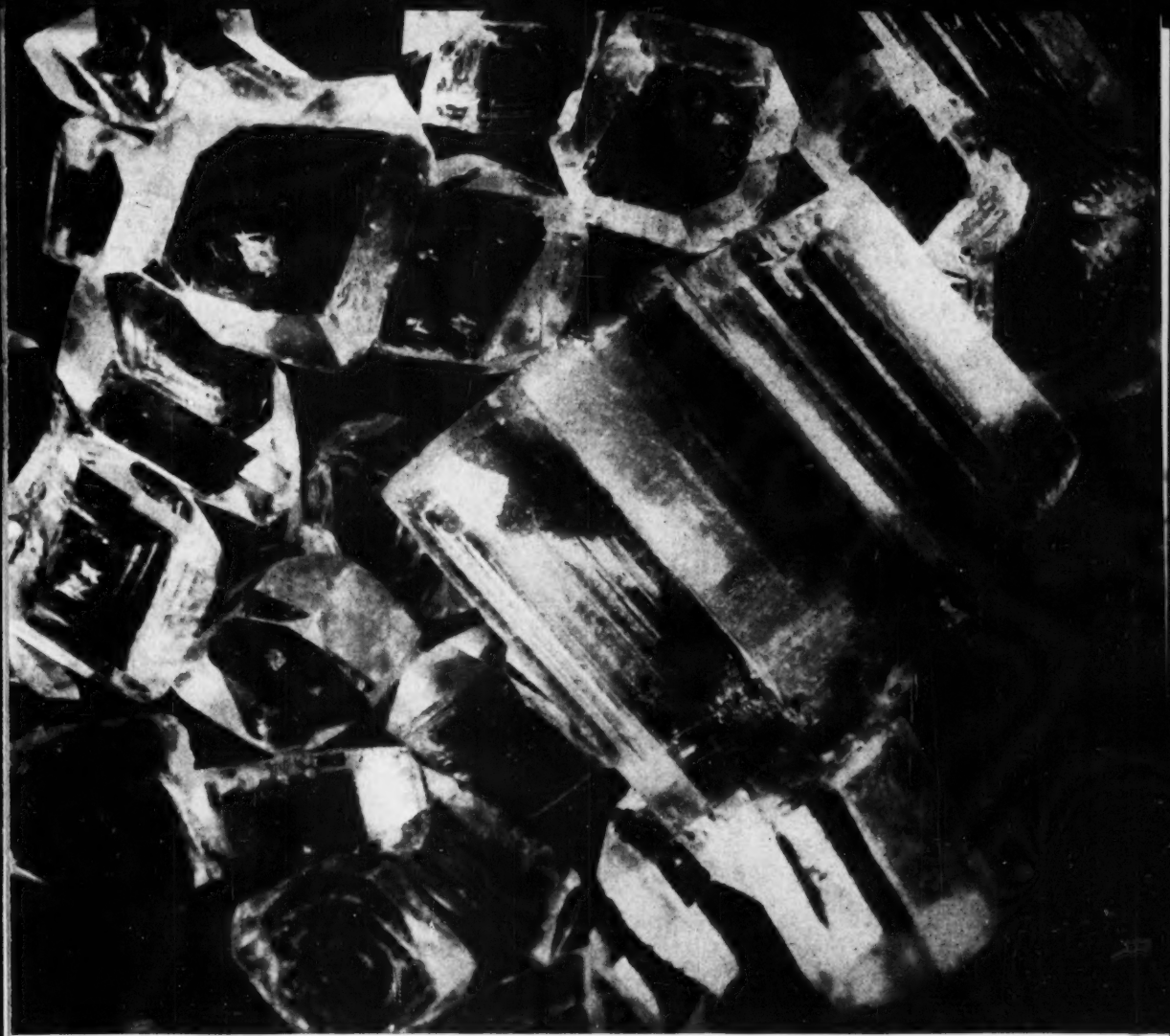
Almost $40 million could be thus realized in one year, used to finance such projects as an additional 50,000 KW generator for Maria Cristina Falls to produce electric power for various chemical and metallurgical projects, an ammonium nitrate plant, a dynamite installation, and a caustic soda and soda ash works.

•

Calcium Carbide: A calcium carbide plant has just gone into production at Talayuthu, India, will have a 70 ton-a-month output. India has in the past imported its calcium carbide from Canada, Africa, and Norway.

•

Catalytic Crackers: Petroleos Mexicanos, the Mexican government's oil monopoly, will add two new catalytic cracking units to its refineries in Ciu-



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dad Madero, and Minatitlan. To cost $3 million, the units will increase Mexican gasoline production 10,000 barrels per day.

•

Dimethyl Aniline: A contract for the design and installation of a dimethyl aniline plant at Torrelavega, Spain for the Asturiana de Minas company has been awarded to Koppers Co., Inc. Construction will begin in March.

•

Fischer-Tropsch: Krupp Kohlchemie (formerly Krupp Treibstoffwerke GmbH) will reactivate its Fischer-Tropsch installation at Wanne-Eickel, West Germany, early this year. Since coal and coke available to the plant is limited, monthly production will reach only 1,000 tons of primary hydrocarbon products, some 350 tons of which will be paraffin.

•

ACTH: An Australian subsidiary of Pacific Laboratories, Inc. (Richmond, Calif.) will go into the large scale production of ACTH. The basic raw materials needed – sheep pituitary glands–are abundant and cheap "Down Under," and the company expects to be able to produce ACTH at prices below current levels.

•

Benzene: A new catalytic pressure-refining process to produce benzene from coal gas has recently been introduced in several of the plants in the Ruhr. Developed by Scholven Chemie AG, the process is said to avoid refining losses, give a product of higher purity, boost benzene recovery 10% over the old sulfuric acid process. Lately there has been a greatly increased demand for benzene in Western Germany, mainly for the production of Buna, solvents, plastics, and explosives. The Ruhr is currently producing only about 300,000 tons of benzene annually as compared to 400,000 tons before the war.

•

Mineral Search: Sufficient phosphates, kaolinite, and glass sand have been found in the Negev Desert to supply Israel's agricultural and industrial needs for 1952. The government-owned Israel Quarries, Ltd. estimates that the Negev will ultimately yield almost inexhaustible supplies of salt, clays, sand, limestone, sandstone, dolomite marble, chalk, gypsum, and feldspar. Exploration is currently under way in the southernmost portion of the desert for manganese, copper, mica, and feldspar, and at Sedom near the Dead Sea for bitumen-bearing rocks.

•

Poland: Chemical industry in Poland claims last year to have exceeded its

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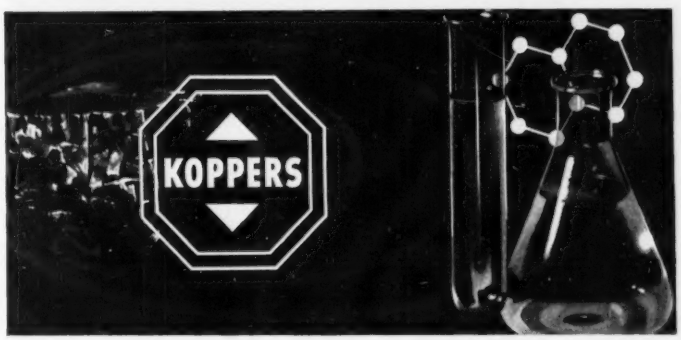
February 6, 1952



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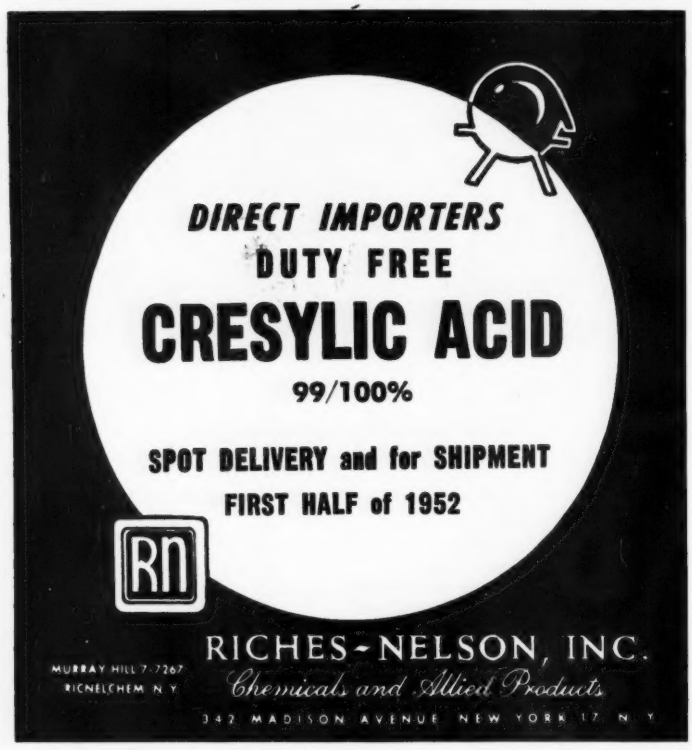

nitrogen fertilizer production quota by 20,000 tons, its dye expectations by 300 tons, its penicillin target by many billion units. For the first time synthetic fibers and sulfuric acid were produced from native materials, enabling the nation to become increasingly independent of imports.

•

Toluene: A plant for the production of synthetic toluene, explosives, high octane gas and DDT has just been opened in Argentina. Built near Campana by M. W. Kellogg Co., the new installation utilizes the "hydroforming" process for making prime materials for industrial toluene.

•

Turkey: Foreign capital is taking a long look at Turkey as a possible big center for chemical investment. Projects currently being discussed with Turkish authorities include a vegetable oil plant to be built by a Dutch firm, a chemical plant to be set up by a Swedish company, a cement factory in which a Danish concern would participate, and a German proposal for a superphosphate and chemical fertilizer plant. Projects put forward by U.S. interests include an antibiotics installation and a DDT plant.

KEY CHANGES . .

Don Scott: From research bacteriologist, organic chemicals dept., Du Pont, to technical director, Vita-Zyme Laboratories, Inc.

Bjorn Anderson: To technical director, Celanese Corp.

Richard G. Brierley: From manager, soya products division, to assistant to the head, W. J. Small Co. division, Archer-Daniels-Midland.

John Kiel: From head, perfume and flavor division, research and development department, Colgate-Palmolive-Peet Co., to consultant, Dodge & Olcott, Inc.

Robert T. Haslam: To director, Dewey & Almy Chemical Co.

Robert S. Jordan: From general sales manager, to general manager, export division, Upjohn Co.

Louis F. Weyand: From vice president and member of the board, to executive vice president, Minnesota Mining & Mfg. Co.

Robert W. Young: To chairman of the board, Minnesota Mining & Mfg. Co., International.

Clarence B. Sampair: To president, Minnesota Mining & Mfg. Co., International.

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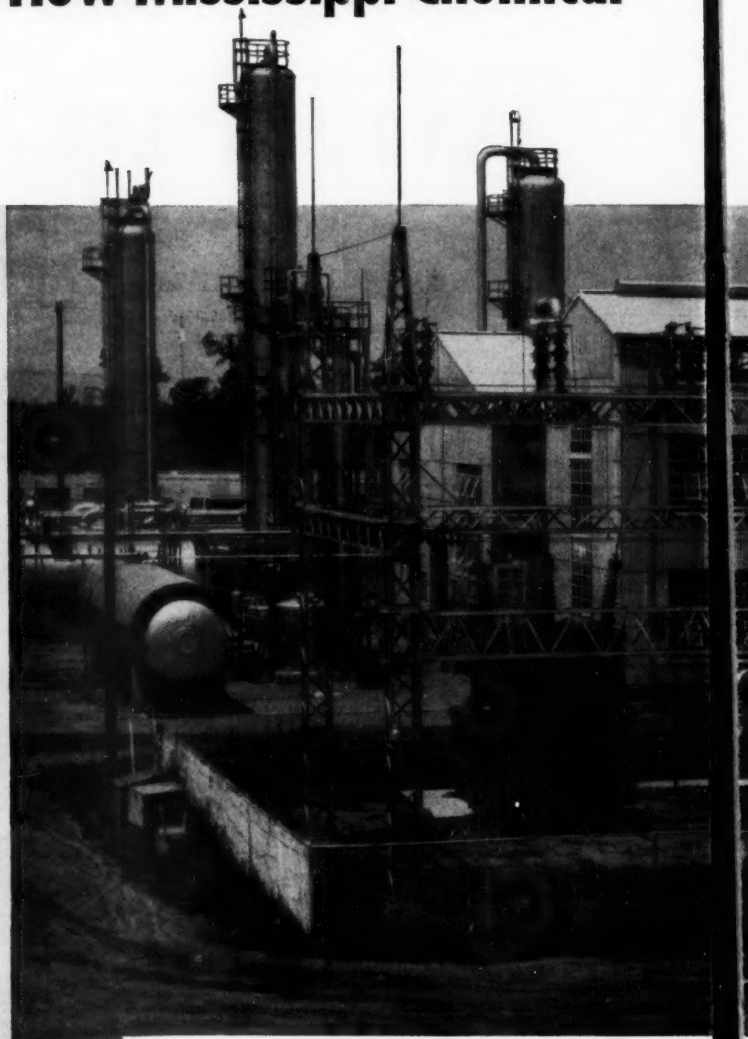
REAGENT • FINE • INDUSTRIAL

How Mississippi Chemical



They did

Mississippi Chemical had a series of *over-all* electrical problems when they were planning this plant.

what

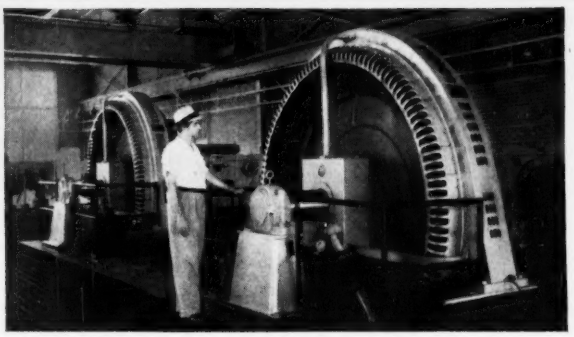
They had Girdler and Westinghouse Engineers *attack these problems as a whole.* Based on previous experience they put together a *co-ordinated electrical system.*

you can do

This experience and this over-all method can be applied to your next project, whatever it is. Westinghouse can work with you on *all* your electrical needs.

to produce more

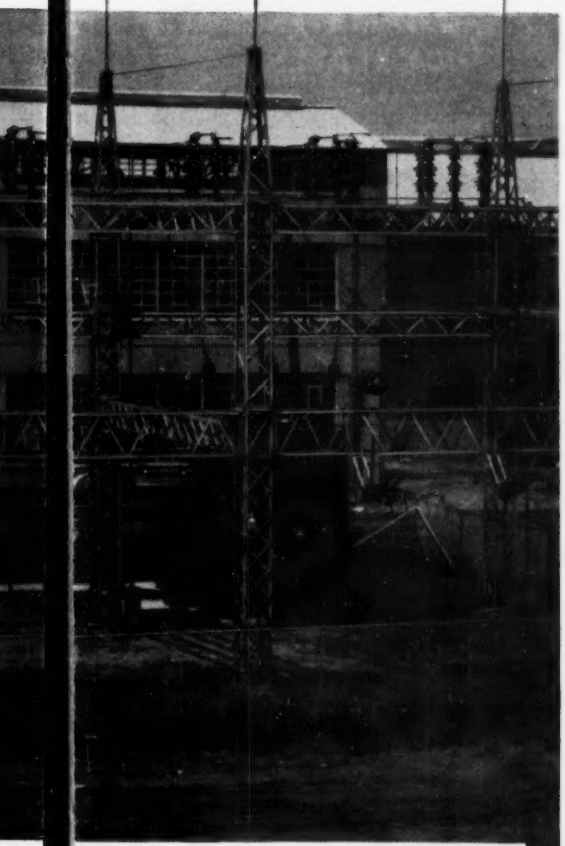
The result will be more dependable production . . . lower costs . . . better operations. Whether you need one motor, or a complex electrical system, call in Westinghouse.



Ammonia Superintendent inspects the 900-hp hyper compressor in the ammonia compressor room. Driving this compressor and all the other drives in the plant are Westinghouse Motors. These motors have a lower installed cost . . . are easier to operate . . . and require less maintenance than other types of drives.

got the BEST power equipment . . .

at no EXTRA cost!



Mississippi Chemical Company recently built a new plant in Yazoo City, Mississippi. For the electrical engineering, Westinghouse and the Girdler Corp., the engineers and prime contractors, put their heads together. By careful planning they developed a power system that uses the best type of modern equipment *but at no extra cost.* They made savings that offset the higher price. Here's how they did it.

Dependable, Low-Cost Power. To make use of the low-cost power available from the Mississippi Power and Light Company, a complete Westinghouse Substation was installed. Included were two 6000/7500-kva transformers. This rating permits line-starting of the large compressor motors and eliminates the need for costly special controls. The best secondary voltage was determined to be 2400/4160Y-volts. This reduces the size of the copper wire . . . keeps line losses at a minimum . . . and can be easily handled by standard transformers.

Top Motor Performance and Protection. For the main compressor drive, they chose electric motors because they have a lower installed cost . . . are easier to operate . . . and require less maintenance than other drives. The motor control centers were installed throughout the plant in non-hazardous locations. They got the advantage of grouped control without using more expensive, explosion-proof equipment.

Emergency Power Assured. For insurance purposes, an immediate source of stand-by power was required. Neither a combustion engine nor a condensing turbine met the requirements of fast, easy operation. However, a Westinghouse Type E turbine did the trick. It could be started by one man . . . reach full operation in 20 seconds . . . and it costs 25 percent less than any other adequate unit.

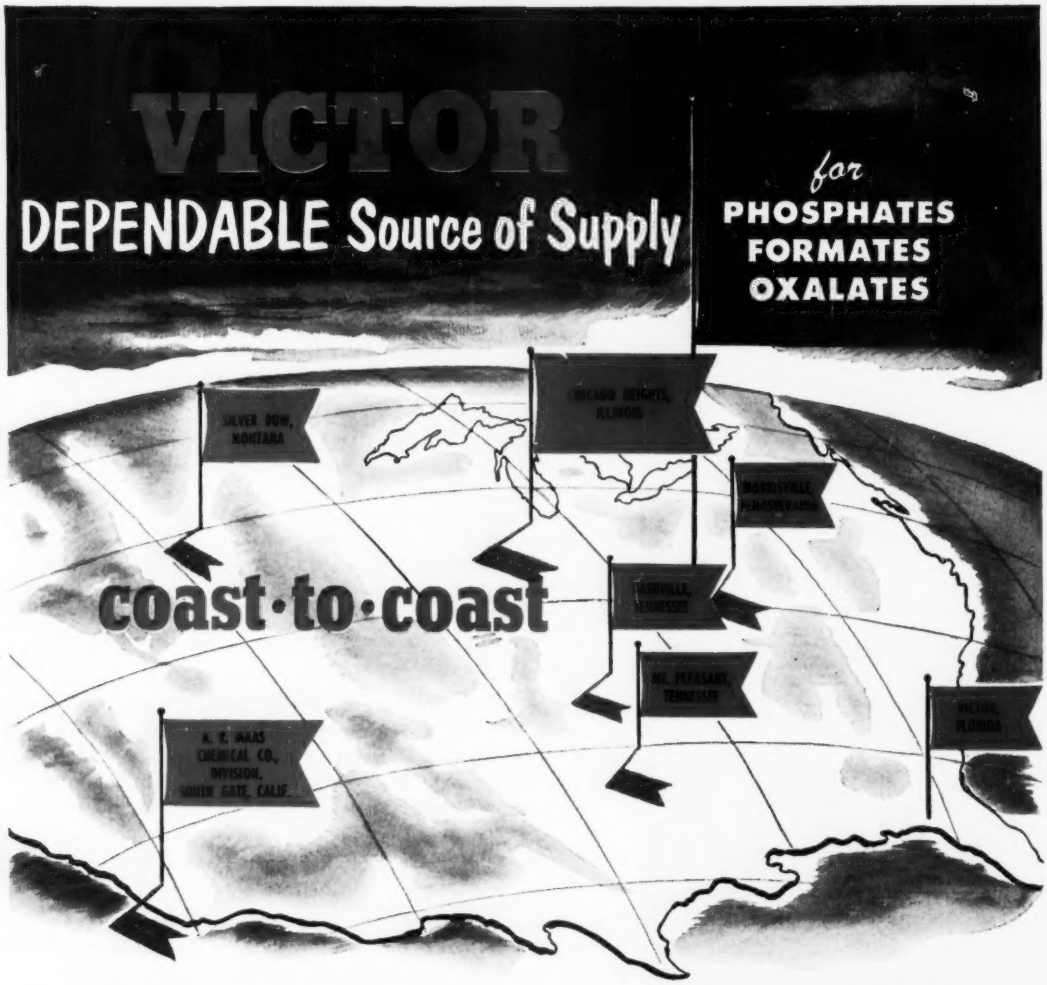
Westinghouse Can Help You. The next time you plan to build or expand your plant, call in Westinghouse. You can get these same benefits . . . the results of accurate system planning and dependable Westinghouse equipment. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-94902

Shown here is a Westinghouse Power and Control Center which supplies the power for the motors in the ammonia plant. These power and control centers are installed throughout the plant in nonhazardous locations to take advantage of grouped control.

YOU CAN BE SURE...IF IT'S

Westinghouse

ELECTRICAL EQUIPMENT
FOR THE CHEMICAL INDUSTRY



When looking for phosphates, formates, or oxalates you should consider this important fact. Victor is the only producer in the industry with 3 elemental phosphorus plants and 4 processing plants to serve you! This means that Victor's multiple sources of power, labor, raw materials, and transportation insure dependability of supply for you.

The Maas Chemical Company division has served west coast industries since 1919. This division of Victor is recognized as a dependable source of supply for sodium phosphates, phosphoric acid, and Maas Photo-Pure chemicals.

Consider Victor's multiple plant facilities and nationwide service when selecting your source of supply. Remember Victor . . . and Maas, the *dependable* names in chemicals.

VICTOR CHEMICAL WORKS

DEPENDABLE NAME IN CHEMICALS

VICTOR CHEMICAL WORKS

141 West Jackson Boulevard, Chicago 4, Illinois

A. R. Maas Chemical Co., Division, 4570 Ardine St., South Gate, Calif.

Polymer Parlay Pays Off

Mylar polyester film, based on an ethylene glycol-terephthalic acid polymer, is the newest product of Du Pont research.

Production is on an experimental basis; full-scale commercial output isn't expected for two or three years.

Electrical applications are the brightest prospects, but other markets will be explored. Drawback at the moment: high cost ($3-$4 a pound).

The payoff on fundamental research may be a long time coming. But often it's well worth the wait. The researches of the late, famed Wallace H. Carothers hatched, after a suitable incubation period, nylon and a bustling synthetic fibers industry. Now, years after Carother's death, his work is still paying dividends.

Du Pont's Mylar, a condensation polymer of terephthalic acid and ethylene glycol, is the latest. Chemically, Mylar is a far cry from nylon. A polyester rather than a polyamide, the new polymer more closely resembles Dacron, Du Pont's newest synthetic fiber. The resemblance ends there; Mylar is a film, has no textile applications.

Its future lies in another direction and here's why: A thin-film dielectric, Mylar combines a tensile strength of 25,000 pounds per square inch with a dielectric strength of 4,000 to 5,000 volts per mil. Flexibility, mechanical strength and electrical stability are good at temperatures ranging from -50 C to 150 C. The film isn't affected by moisture, is dimensionally stable over a broad range of relative humidities.

Mylar is essentially free of electrical faults in extremely thin sections; Du Pont says films as thin as 0.25 mil* "possess mechanical and dielectric strength equal or superior to many dielectric materials of much thicker cross-section." And it's relatively resistant to attack by oils, varnishes and chemicals (with the exception of phenolic solvents) normally used in electrical manufacture.

* About 1/3 the thickness of Du Pont's thinnest commercial films.

Reduce To Fit: All this adds up to a promising future in the electrical industry. As a capacitor dielectric, the new film's high mechanical and dielectric strength in thin sections offers attractive space savings. Incidentally, this fits right in with the growing military emphasis on weight and bulk reduction for air-borne equipment.

High temperature performance is another attribute that should appeal to capacitor manufacturers, open new and previously inaccessible fields of application for their wares. Motor and generator insulation are additional potential outlets; Du Pont points out that the film's moisture resistance could lead to simplifications in the design and assembly of such equipment.

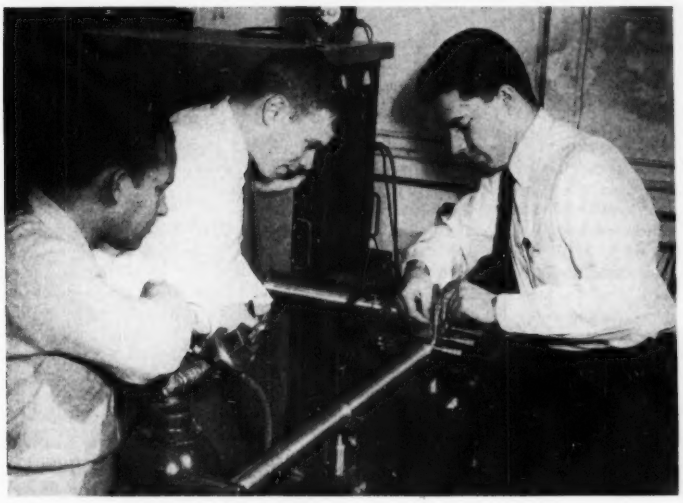
Aside from its appeal to the design engineer, Mylar has something to offer the production man. It's well suited for use in high-speed taping machines, promises savings in production time and cost in operations like coil winding and wire wrapping.

Electrical applications look like Mylar's best commercial bet for the immediate future. But don't discount its use in other uses not now satisfied by existing films. Film-based industrial tape is a good case in point, but one that will take further development. Still in the speculation stage are uses in packaging, lamination, collapsible tubing and storm windows.

Du Pont's Mylar is a close chemical relative of the British polyester fiber Terylene. Both sprang from the same fertile ground—the early polymer studies of Du Pont researcher Carothers. Both Du Pont and British researchers followed up Carothers' work, Du Pont eventually purchasing patent rights from the British for one of the promising polyesters.

Three For One: Further research with this polymer produced Dacron polyester fiber, a new photographic film base (*CW, Dec. 29, '51*) and now Mylar. More than $3 million went into Mylar research and development, yet the end isn't in sight. Further applied research is expected to continue for several years.

Mylar now is in experimental production by Du Pont's Film Department at its Yerkes Research Laboratory (Buffalo, N.Y.). Only limited quantities can be made with present manufacturing equipment; it will be some time before the film is generally available. Cost is high—$3 to $4 a pound—but reduction is likely when large-scale production comes in.



Closer Look At Life

H. H. PATTEE, JR., shows fellow Stanford University researchers L. M. Rieser, Jr., and Hussein A. A. El-Sum how mirrors are adjusted in their new X-ray microscope. The instrument has a smaller magnification and resolving power than the electron microscope, but—unlike the latter—needs no vacuum, can be used to examine living systems like cancer cells. Further refinement is the next step in the research which has been supported for the past three years by Research Corporation, New York.

Herman F. Hoerig, director of Yerkes Laboratory, tells CW that current semi-works facilities are capable of producing Mylar in continuous roll form ranging in thickness from 0.25 mil to 3 mils. Development work is progressing, aimed at producing heavier gauges (e.g., 5 and 7 mils). Certain process refinements are also still under development. Hoerig estimates that extensive commercial production won't be reached until sometime late in 1954 or early 1955.

New TB Weapon

Lederle Laboratories Division (Pearl River, N.Y.), American Cyanamid Co., reports a new drug effective against advanced tuberculosis. It's a vitamin-like compound which Lederle calls Aldinamide.

Clinical tests conducted by Veterans Administration and a New York sanitorium give a fair hint of the drug's therapeutic value. Taken orally, Aldinamide reduced fever, coughing and sputum in a significant number of cases. In certain instances, doctors observed rapid healing of acute lesions.

Aldinamide is definitely not a TB cure-all. One medical authority says that on the whole it's not as good as the streptomycin-para-aminosalicylic acid (PAS) combination. Nevertheless, it can teach the antibiotic a thing or two and here's why: Aldinamide has proved effective in advanced cases of the disease that had become resistant to streptomycin-PAS.

The drug's ability to take up where streptomycin-PAS leaves off is probably the key to its commercial future. But that future isn't completely rosy. One headache: Acquired resistance hits Aldinamide as hard as streptomycin; patients generally become resistant to the drug within 42 days. And toxic side-effects are not uncommon, although apparently not too serious.

The discovery, by Lederle's Samuel Kushner, of the antitubercular activity of the B-vitamin, nicotinamide, sparked the research leading to the new drug. More than 60 related compounds were synthesized and screened before Aldinamide came on the scene and the possibilities are probably far from exhausted. Lederle researchers would seem to have their work cut out in the quest for new drugs of the same class.

Aldinamide may prove to be a powerful weapon in the fight on tuberculosis; but its therapeutic value could in time be overshadowed by its significance as a stepping stone to more potent TB drugs of the future.

MENLO'S WEEKS: For mass-screening, an orange glow.

Hot Atom Dogtag

Nuclear reactor, bevatron and the H-bomb are symbols of the atomic age. Here's a new one that hasn't quite arrived—atomic dogtag. It's a device that will enable rapid mass-screening of populations that have been exposed to atomic radiation. A practical atomic dogtag is still a thing of the future. But a hint of its proximity comes from Menlo Research Laboratory, Menlo Park, Calif.

Menlo director Charles Weeks reports that his laboratory has developed a screening technique based on radiation-sensitive silver-seeded phosphate glass.

The sensitivity of silver-phosphate glass to radiation isn't a startling new discovery; it has been known for years. As a matter of fact, its dosimeter possibilities were pointed up in Oct. 1950 by R. S. Alger of Naval Radiological Defense Laboratory, Hunters Point, Calif. Alger's work sparked, in great measure, the research at Menlo Park.

Pittsburgh Plate Glass Co. and Bausch & Lomb now make the glass in small quantities for laboratory investigation. About 8% ionic silver is added to phosphate glass during compounding. When irradiated, the silver ions are reduced to atoms which function as activation centers. The number of activation centers formed is a linear function of exposure.

In ultraviolet light these centers of activation fluoresce with a characteristic orange color; the more intense the color, the greater the dose of radiation received.

Coin-size dosimeters made from the radiation-sensitive glass could be issued on a large-scale for about a nickel apiece. These tags could be imprinted with the owner's name, address and blood-type

Here's how they would be used in the event of atomic attack: Civil defense workers, using a suitable detector, would compare the color intensity of exposed tags with a standard made by exposing a piece of the glass to the minimum harmful dose of radiation. A tag more orange than the standard indicates that its bearer is in line for medical attention.

Easy Weeding: The test is simply a matter of color comparison; no technical knowledge and very little training would be needed. Civil defense wardens, policemen, firemen—or practically any one—could weed out the injured at a rate of about 200 an hour.

Detectors could operate on house current or batteries, could be made portable if necessary. Weeks says a small model weighing only two pounds and operated on standard flashlight batteries could be used. Menlo researchers are now trying to determine the best instrument for the job.

Also under investigation is the possibility of replacing the single standard with rings of glass which have been exposed to varying amounts of radiation—the most exposed ring signifying a dose producing irreparable injury. The victim's tag would be placed in the center of the concentric rings and matched for color.

Where practical, a photoelectric cell could replace the human eye. But that's about as complex as the system would get; no developing equipment would be needed as is the case with present film badges. A complete detecting kit would probably cost less than $25.

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Pacing the Times: Schwarz Laboratories, Inc., will soon begin production of radioactive biochemicals on a commercial basis. Glutathione labeled with sulfur 35 is available now; other compounds will be synthesized on order.

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Short Cut: Some interesting data on the keeping qualities of vitamin B_{12} have recently come to light as a result of radioactive tracer studies performed by Merck & Co., Rahway, N.J.

Radioactive cobalt was used to tag the capsuled vitamin prior to storage for periods up to 13 months. Results showed that 10% to 30% of the vitamin was lost after a year on the shelf.

•

Cortisone Advance: Schering Corp. chemists report a new process for converting cattle bile products into cor-

When an old chair gets a new look . . .

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are in the picture

● It's a wonder what a coat of paint can do. Quickly, almost magically, a worn surface is restored to new beauty. The good looks and fast drying qualities of today's paints, lacquers and varnishes are made possible by solvents that contain U·S·S Toluol and U·S·S Xylol.

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United States Steel controls all the processes in production of U·S·S Coal Chemicals, from mining of coal to final distillation. Nine plants from coast to coast produce U·S·S Coal Chemicals. A tenth is under construction. For quality and service, you'll find United States Steel a good source of supply. United States Steel Company, 525 William Penn Place, Pittsburgh 30, Pa.

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USS

UNITED STATES STEEL

New booklet tells uses for fatty alcohols

There are good reasons why chemists have specified CACHALOT brand fatty alcohols for over twenty years. For one, CACHALOT specifications are held to such close tolerances that you don't have to worry about formula adjustments with every lot. Then, CACHALOT technical, USP, and NF grades are available in great enough variety that you can get the exact combination of properties you need for your special use. In fact, you may even buy CACHALOT fatty alcohols made to your order. Many facts about CACHALOT cetyl, oleyl, and stearyl alcohols are to be found in a handy booklet obtainable from *M. Michel and Company, Inc.* Just write them at 90 Broad Street, New York 4, N. Y. *M. Michel* has been a basic supplier to chemical manufacturers for over a quarter century, and their trade name for their best fatty alcohols is

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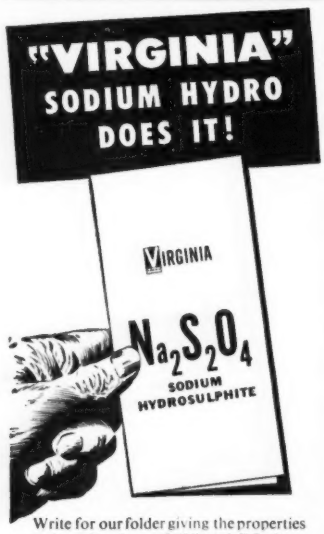

Write for our folder giving the properties and applications of "Virginia" Sodium Hydrosulphite. **VIRGINIA SMELTING CO., Dept. CI, West Norfolk, Va.**

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tisone which by-passes several conventional, time-consuming steps. Chief short-cut is a new seven-step method for producing a cortisone intermediate from desoxycholic acid; an eleven-step technique devised by Edward C. Kendall is now in common use.

•

On Schedule: Malvern J. Hiler, president of Commonwealth Engineering Co. of Ohio (Dayton) sees 1952 as a peak year for industrial research.

Hiler bases this prediction on observations of research activity prior to and following two world wars. He says, "In both periods, industry required about four months to switch from civilian goods to war work after the start of a defense program. Then, for 18 months, commercial research was on the downgrade. After this lapse of time, companies began to worry about their post-war markets and research picked up. At the end of each war, peacetime production and research continued at a high peak for three years before falling back to normal."

We are now 18 months from the start of the Korean War and, according to Hiler, commercial research shows signs of increasing. A jump in the number of patent applications during the last two months is cited as evidence of this upswing.

•

Sugar Research: New uses for sugar cane residue is the goal of a research project planned by Hawaiian Sugar Planters Assoc. Work will be concentrated in four fields: separation of pith from fibrous material in cane residue; using cane pith in livestock feed; increasing the conversion of molasses and cane residue to chemical products; and using cane fibre for paper pulp. Research will be conducted in Hawaii, San Francisco and Peoria, Ill.

•

Odor Service: A new consulting service, dealing with commercial odor and taste problems, is now operating under the name Sagarin Institute for Olfactory Research, Inc. Among problems which the new firm will tackle are those concerning the efficiency of deodorant soaps and cosmetics, similarity of odors and tastes, effect of dentifrice ingredients on mouth odors, potential consumer acceptance of an odorous product, and the effect of odorous ingredients on taste reaction.

•

New Grants: Iowa State College is the recipient of two grants, totalling $5,000, for agricultural research at Iowa Agricultural Experiment Station.

Half the money was put up by the Du Pont Co. for a study of rations and other factors concerned in growing and fattening pigs. Experiments are under way to determine whether it is possible to reduce protein requirements by fortifying corn-soybean oil meal with amino acids.

California Spray Chemical Co., donor of $2,500, has labeled its contribution for research on the control of insect pests in field and sweet corn. The study will include the use of lindane in seed treatment and application of the insecticide to the soil.

•

Citrus Dye: Rudolph Hendrickson and J. W. Kesterson, researchers of Florida State Citrus Experiment Station (Lake Alfred, Fla.), have succeeded in their efforts to develop textile dyes from the rind of citrus fruit. Ten new dyes, in the red-orange-yellow range, are the results of their work. The dyes are applicable to silk and wool, have not proved effective with other fibers. Future plans: manufacturing process improvements with an eye to commercialization.

•

New Standards: Add the following newcomers to American Petroleum Institute (Carnegie Institute of Technology, Pittsburgh, Pa.) standard hydrocarbon samples: 1,1,2,2-tetramethylcyclopropane; 5-methyl-1-hexene; 3-ethyl-2-pentene; 2,2-dimethyl-cis-3-hexene.

•

Atomic Emphasis: H. B. Coats is first director of the newly organized Research and Development Department of the Chemical Plants Division, Blaw-Knox Co. The new department will concentrate on the study and evaluation of new processes with special attention to development of industrial applications of atomic energy.

•

Now Commercial: N-ethyl ethanolamine is newly available in commercial quantities from Carbide and Carbon Chemicals Co., Division of Union Carbide and Carbon Corp. Derivatives of the ethanolamine can be used as textile emulsifying agents, insecticides and fungicides. Other potential applications: dyestuffs, pharmaceutical and resin intermediate.

•

Patent Abstracts: A new patent abstract service has been set up by Picturesort Co., New Haven, Conn. The firm supplies photographic abstracts weekly as issued in the Official Gazette; subscribers may sign up for only the particular type of patent they desire. Abstract cards may be had punched according to class, sub-class or special code to accommodate individual filing and sorting systems.

Farval pays for itself quickly, many times over

...saving oiling labor
...saving lubricant
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...saving production time

WITH Farval you lubricate your machinery or equipment mechanically. Farval does the job quickly and dependably.

Any type of bearing surface, enclosed or open, can be Farval-lubricated with grease or oil. Measured charges of lubricant are metered to each bearing through the unique Dualine Valve, delivered under pressure from a central reservoir, either by a manually operated pump or one actuated by an automatic time-clock mechanism.

Farval is not a new idea. It has proved its value in service over a 23-year period, protecting millions of bearings in every phase of industry—in manufacturing plants, mining and quarrying operations, transportation—wherever there are bearings that have to be lubricated. Thousands of installations on mills, presses, conveyors, cranes, engines and other industrial equipment provide records of money saved. Savings take four forms:

1. Labor saving—Farval eliminates hand oilers. Minimum attention only is required—to inspect system, refill lubricant reservoirs, etc.

2. Lubricant saving—Correct amounts are used without waste, frequently reducing oil or grease consumption as much as 75%.

3. Bearing expense saving—No more burned out or damaged bearings with Farval protection. Expense of replacement eliminated.

4. Production time saving—Farval lubricates while equipment is running. No shutting down to oil. No taking a machine out of production to repair or replace bearings.

In short, savings are so positive that you soon recover the entire cost of a Farval system—and savings continue as extra dividends.

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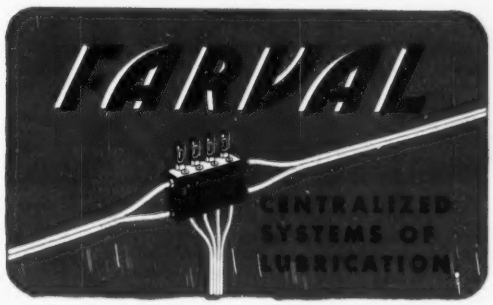

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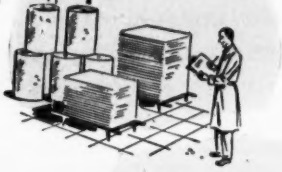
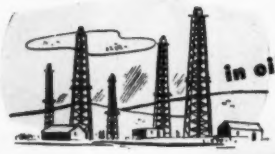
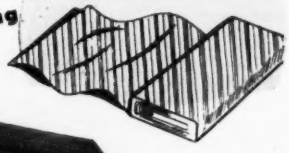




in oil-drilling muds

in textile processing



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As leading primary producers of Sodium Phosphates, Blockson has made substantial plant additions in its ever-deepening to keep up with the increasing Sodium Phosphate demands of American industry.

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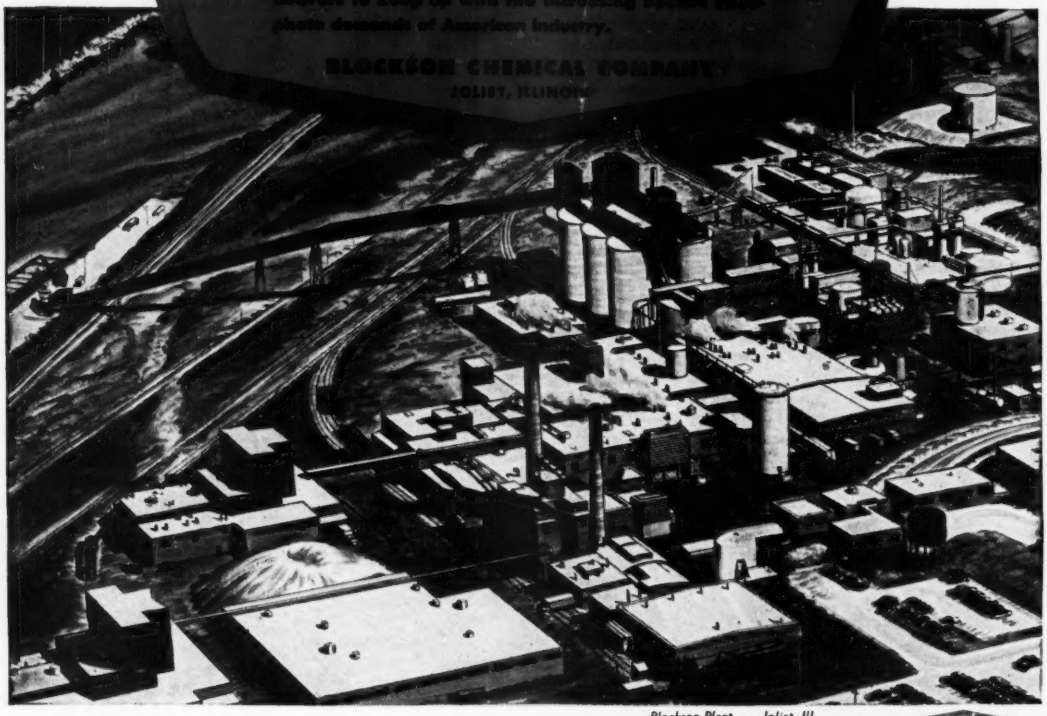

Blockson Plant . . . Joliet, Ill.

- Sodium Tripolyphosphate
- Tetrasodium Pyrophosphate, Anhydrous
- Sodium Polyphos (Sodium Hexametaphosphate) (Sodium Tetraphosphate)
- Trisodium Phosphate, Crystalline
- Chlorinated Trisodium Phosphate
- Trisodium Phosphate, Monohydrate
- Disodium Phosphate, Anyhdrous
- Disodium Phosphate, Crystalline
- Monosodium Phosphate, Anhydrous
- Monosodium Phosphate, Monohydrate
- Sodium Acid Pyrophosphate
- Sodium Silicofluoride
- Sodium Fluoride
- Hygrade Fertilizer

BLOCKSON

I-T-E's OTTO JENSEN: To draw current, wheel it in and make connections.

Competition for the Arc

Mechanical rectifiers offer substantial savings on power and unit housing in the 50 to 400 v. range.

Initial costs are competitive, maintenance costs will remain a question mark until they have been field-tested.

They are more sensitive to overload than the mercury-type and that may result in more frequent "down time". But mechanical rectifiers are easily put back into service.

Drawing direct current from an ac source has never presented an insurmountable obstacle; the consumer merely has to put in a suitable rectifier. Only trouble has been that, until recently, users in the range of 50 to 400 v.—and that could include practically the whole field of electrochemistry—were at a competitive disadvantage. In conventional rectifiers, there is a constant voltage drop—at the arc of a mercury arc rectifier, or at the brushes of a motor generator. Operating at high voltages, the loss is not noticeable; but at 400 v. or lower it causes a sharp drop in rectifier efficiency.

Now, however, mechanical rectifiers eliminate the constant loss, permit high efficiencies in the low range. Built in this country by the I-T-E Circuit Breaker Co. (Philadelphia), mechanical rectifiers are capable of getting efficiencies of 95% at voltages as low as 50 v.

Cart Before the Horse: As I-T-E sees it, formerly there was a trend toward higher voltages; the one selected for a given application was often greater than desired or convenient from the standpoint of utilization. But the lower voltages are inherently attractive because of the added safety factor to workers and lower losses in leakage to ground. Thus I-T-E expects that mechanical rectifiers will help reverse the trend by reawakening interest in the low-voltage range.

The first mechanical rectifier in this country was installed at Buffalo Electrochemical's hydrogen peroxide plant. The company has since ordered six more rectifiers and a number of chemical firms are following suit. Demand for the rectifiers is currently outrunning production.

Biggest reason for the ready acceptance of the mechanical rectifiers is the dollar savings afforded by the high efficiencies in the low-voltage range. For example: Assume you have a medium-size unit, rated at 400 v. and delivering 5,000 amps. If you run it 24 hours a day, 350 days a year, and if you are buying power for 5 mils a kwh., your yearly power bill is going to run about $84,000 a year. A mechanical rectifier will give an approximate 3% gain in efficiency over the best competitive rectifier for that voltage. That adds up to a savings of $2,500 a year.

At lower voltages, absolute dollar savings are comparable, but percentagewise they are even more emphatic. For instance, under the same conditions for a 100 v. unit, a mechanical rectifier gives an efficiency gain of 9.5%. On power bills of about $25,000 a year, you would be saving almost $2,000.

Moreover, the efficiency of mechanical rectifiers is practically independent of the percent load, whereas the efficiency of other rectifiers drops off sharply from "full load." As an example, the 100 v. installation can operate at 25% load with an efficiency of 94%—higher than other rectifiers at full loads.

Aside from efficiency considerations, mechanical rectifiers occupy less space than other rectifiers, thus effect savings in building costs for housing the unit. A mercury arc rectifier for the 100 v., 5,000 amp. installation would probably take up two stories totaling 11,750 cu. ft. (although space requirements can be halved by putting it in one story). A mechanical rectifier can be housed comfortably in a one-story building, and space requirements would be 960 cu. ft. Taking the conventional $1 per cu. ft. for industrial buildings, housing for the mechanical rectifiers would cost only $960, a saving of $10,790.

Cost and Upkeep: The cost of the mechanical rectifiers will be no greater than present types in the voltage range of 50 to 400 v., says I-T-E. And supplied in packaged units, the rectifiers are easy to install. As I-T-E's Otto Jensen, manager of the Rectifier Division, puts it: "All you have to do is roll in the equipment, make a few connections and start drawing direct current." Jensen adds that operation of the rectifier requires no special talents, probably won't need a full-time operator. "Anyone who can turn a screw driver and use a monkey wrench can do the job," he says.

One big question about mechanical rectifiers is maintenance costs. Contacts have been proved capable of operating continuously for 4,000 hours (possibly 8,000) and can be replaced for $5. I-T-E, however, is frankly reserving judgment until they have been proved in the field over a long period of time.

Mechanical Rectifier Savings at 5,000 Amp.

	For power costing (cents per kwh)								
		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
Volts	Yearly Power[1] Kwh .10[5]	Yearly Power Costs ($1,000)								Efficiency saving[2] (%)
400	168	50.4	67.2	84.0	100.8	117.6	134.4	151.2	168.0	3
300	126	37.8	50.4	63.0	75.6	88.2	100.8	113.4	126.0	3
200	84	25.2	33.6	42.0	50.4	58.8	67.2	75.6	84.0	4.5
100	42	12.6	16.8	21.0	25.2	29.4	33.6	37.8	42.0	9.5
		Yearly Savings (in dollars)								
400		1,512	2,420	2,520	3,024	3,528	4,032	4,536	5,040	
300		1,134	1,512	1,890	2,268	2,646	3,024	3,402	3,780	
200		1,134	1,512	1,890	2,268	2,646	3,024	3,402	3,780	
100		1,197	1,596	1,995	2,394	2,793	3,192	3,591	3,990	

[1] *For a unit working 24 hours a day, 350 days a year.*
[2] *Over best competitive rectifier for the voltage. CW estimates are based on published efficiency curves for common rectifiers.*

And strictly on the debit side, mechanical rectifiers won't stand up as well as mercury arc rectifiers under severe overloads. The mercury arcs are practically unbeatable from a standpoint of continuous rugged operation. Contact rectifiers, under severe overloads, will backfire and cause "down time." But even that is partly compensated by the ease with which they are put back into service.

Step in the Sine Wave: Actually the principle behind the mechanical rectifier is quite simple. It produces direct current by making contact between a proper phase of an ac and the associated dc system. During the time interval, the particular phase of the ac system delivers energy in the desired direction, then breaks metallic contact when the ac phase reverses its potential in relationship to the dc voltage. Made of silver, the contacts are synchronous-motor-driven.

The trick is that in order to get a continuous current, a new phase must be connected before the old phase is disconnected. That is accomplished by modifying the alternating current so it remains at zero for a period of time. The resultant current can best be visualized graphically: After modification, the normal sine wave for commercial alternating current is altered so that a "step" occurs at zero, with each change from positive to negative and negative to positive.

The idea for a contact mechanism goes way back, but it was not until 1940 that the first successful commercial installation was made. At that time, Siemens-Schuckert put one in at the I. G. Farben Bitterfield. Siemens made several units after that, was ready to deliver 120,000 amps at the end of the war, but the Russians "liberated" the machines.

At the present time, Brown Boveri (Baden, Switzerland) is building them, and AEG Company (Berlin) has built several units for Soviet countries and is quoting prices for delivery in Europe. But although the Europeans have had a running start in the development of mechanical rectifiers, all indications are that the U. S. is rapidly catching up.

Synthetic Fuel, Round Two

In an interim report, a special committee of the National Petroleum Council opened the third round in its running fight with the Bureau of Mines on the costs of synthetic fuels. Although the committee says it is working harmoniously with the Bureau of Mines, actually the two are miles apart. To be more specific, they differ by 30¢ on the cost of hydrogenating coal to make a gallon of gasoline that is currently wholesaling for 12¢ a gallon.

The first round opened last fall when the committee (Committee on Synthetic Liquid Fuels Production Costs) completed a $300,000 study. It said that cost of gasoline from a coal hydrogenation plant (with a total output of 25,000 barrels a day) would be 41.4¢ a gallon. From oil shale, on the other hand, in a 39,700-barrel-a-day plant, gasoline could be made for 14.7¢ a gallon.

This was not an encouraging estimate for anyone intent on turning over a fast dollar by making gasoline from coal hydrogenation since the

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NEVER has such a wide choice of these important materials been available from a *single source.*

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wholesale price of gasoline at the refinery is only 12¢ a gallon. And since coal hydrogenation has long been a project near to the heart of the Bureau of Mines, round two was not long in unfolding.

The Bureau took a long hard look at its own figures, agreed with the NPC on the 14.7¢ for gasoline from oil shale. But instead of the NPC's 41.4¢ for a gallon of gasoline by coal hydrogenation, it estimated that it could be produced for 12¢ a gallon. The main points of difference:

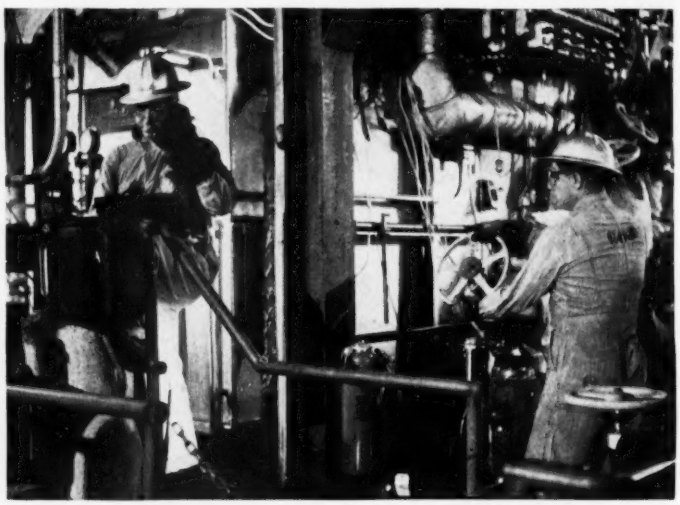
• **Investment.** The Bureau of Mines estimates an investment of $121.5 million less than the NPC. The biggest discrepancy is in the actual plant cost. Although the Bureau of Mines is basing its estimates on a 30,000-barrel-a-day plant, and NPC, 27,000 barrels, the Bureau figures for the plant are $55 million short of NPC's. The Bureau of Mines allowed for an increase in the cost of construction materials, but NPC claims it did not allow for the bigger plant and that it incorrectly determined the steam and power requirements. Besides, says NPC, the Bureau's original estimates were inadequate by $60-$70 million.

NPC allows $55 million for housing, and the Bureau of Mines can see no reason why plant owners should assume responsibility for housing expenditures. This is a relatively minor point however, since NPC figures rental income would recover 90% of the investment and the effect of housing charges amounts to less than 10% of the difference between the two estimates.

The remaining $19 million difference between the two investment estimates is due to differences of opinion on allowance for working capital, start-up and other capital expenses.

• **Labor and maintenance.** The Bureau of Mines' estimate of operating labor cost is only 60% of NPC's, and that accounts for 2¢ of the discrepancy between the two estimates on product costs. NPC says its estimate is based on the experience of commercial operations approximating the one under study. In addition, NPC claims that the Bureau of Mines went astray when it estimated maintenance labor as a ratio of operating labor. It says the correlation is basically unsound and has led the Bureau grossly to underestimate maintenance labor.

• **By-products.** The plant proposed by the Bureau of Mines would turn out more than half its total output as chemicals and so cannot be classified as a liquids fuel plant at all, ac-



Liquid Sodium for Atomic Subs

GENERAL ELECTRIC'S WORK on the development of a submarine intermediate reactor (SIR) power plant is progressing satisfactorily. Tests have now proved liquid sodium—because of low pressure at high temperature and heat transfer properties—is better than water as a heat-transfer medium. Metallic properties of sodium have also been put to use in an "electromagnetic pump" that permits the transfer of sodium by direct application of electromagnetic forces. The pump eliminates the possibility of leaks, requires no moving parts, thus is ideal for use with radioactive fluid.

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- Excellent properties of dispersion and emulsification

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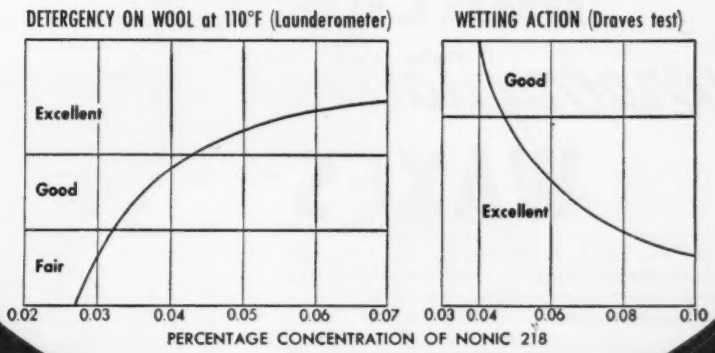

For additional information, write to Dept A

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PRODUCTION . . . .

cording to NPC. It adds that if the plant is to be justified on chemical products, it must be compared with alternate processes to make them.

• **Investment return.** The Bureau of Mines has been critical of the financing methods proposed by NPC. The latter defends its stand by pointing out that, under its estimates, manufacturing costs alone amount to 20¢ a gallon, after full credit for by-products but without any allowance for interest, income taxes or return on investment. In view of the wholesale cost of present gasoline (12¢), any financing costs in NPC's estimate are largely theoretical and are included only to set a minimum selling price.

EQUIPMENT. . . .

Scanning Desk: A console desk to make life easy for chemical operators has been designed by Minneapolis-Honeywell Regulator Co. Working at the new desk, says the company, an operator can scan up to 96 temperature points in as many seconds.

•

Plastic Packing: Flexrock Co. (Philadelphia) reports that it has added Teflon fluoroplastic packing and gaskets to its line. Packing is supplied—lubricated or unlubricated—in endless rings and in continuous braided construction; gaskets, in jacketed construction or as solid Teflon ring gasket and special shapes.

Two $1,000 Smiles

PAUL DORRIN and Victor Thomson (General Petroleum) are all smiles because each has picked up a $1,000 check for their device to mix liquid bromine with cooling water. The device will save the refinery 8% of its annual consumption of liquid bromine.

GE Chemical Progress

News of developments from General Electric's Chemical Division that can be important to *your* business.

SAVE SCARCE METALS WITH NEW G-E COATING INTERMEDIATE

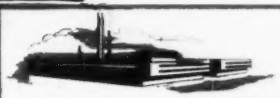
Here's a new and versatile product of General Electric's program of chemical research. It's R-108, a coating intermediate that provides exceptional resistance properties to industrial finishes.

Finishes formulated with R-108 are highly resistant to chemical corrosives. Their use extends the life of steel shipping containers like tank cars and drums. Ordinary steel chemical processing and manufacturing equipment, coated with finishes containing R-108, can often be substituted for expensive and hard-to-get alloys.

Coatings made with R-108 are mar-resistant, adhere well to metals, glass, wood and plastics, and fit in easily with standard techniques for applying and baking.

This picture shows how a corrosive poured on a metal section coated with R-108 (to right) doesn't affect the surface! Untreated section (to left) is badly scarred. Tests also show that R-108 imparts unusual toughness, adhesion and heat resistance to metal finishes.

You can obtain a complete technical report on R-108 by writing to: Chemical Division, General Electric Company, Pittsfield 14, Mass.



G-E PLASTICS FOR DEFENSE

General Electric chemical products are already being used in many important defense applications. Among the numerous products and services offered are new, expanded molding facilities which enable G.E. to mass-produce low-cost plastics parts quickly and efficiently. Injection machines range in size from 1½ to 208 ounces; compression and transfer equipment, from 3 to 36 inches. G-E chemical plants are located at Pittsfield, Mass.; Schenectady, N.Y.; Waterford, N. Y.; Coshocton, Ohio; Decatur, Ill.; Taunton, Mass.; and Anaheim, Cal.

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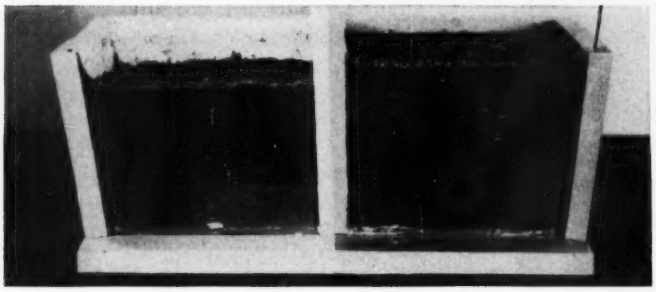
FOR YOUR INFORMATION

Every month Monsanto publishes these pages of pertinent information which may be useful to you. This issue discusses:

Soil Conditioner — Dispersing Extender
Blond Finish Ingredient — Dispersing Agent
Dyeing Assistant — Emulsifier No. 1
Phenylacetic Acid and Derivatives — Metal Surface Protective

Additional information will be furnished on request.

MONSANTO'S NEW SOIL CONDITIONER GIVES WORN SOIL NEW LIFE



Here's a demonstration of the effectiveness of Monsanto's new soil conditioner. The sample at the left is untreated. Notice how the soil has become packed. In the section at the right, identical soil has been treated with Krilium. The treated soil remains crumbly and will maintain this condition indefinitely.

Extensive demonstrations of Monsanto Krilium* soil conditioner will be conducted in 1952. Two years of experimental applications indicate its possibilities in reviving worn land, making marginal farms profitable and increasing production of ground where poor soil structure causes low yields. In addition to its agricultural uses, Krilium may be used profitably by the ceramics and oil-well drilling industries.

Production of the soil conditioner in 1952 will be no more than enough to conduct the demonstrations which are planned for various parts of the country. It is expected to be available for general use by planting time in 1953.

The soil conditioner, a synthetic resin, contains no plant nutrients. It shows promise of making commercial fertilizers more readily available to plant growth. This is the result of improved soil structure obtained through the use of the soil conditioner.

Krilium improves soil tilth, makes it more porous and easier to work. The ratio of improvement of soil structure with Krilium is on the order of one pound of the soil conditioner to between 100 and 1000 pounds of compost or other types of plant residues. The resin is quick-acting, giving observable results in 24 hours or less.

Improvement of poor soils is indicated, along with considerable increase in yields. Test plots show increases of 60% to 200%. Increases result from better stands, faster germination, earlier maturity and greater plant structure.

Treated soils show less tendency to crust, making it easier for seedlings to break through. The treated soil being more porous allows more oxygen to reach the roots and allows roots to penetrate more deeply into the ground.

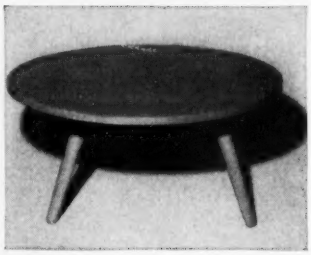
Treated soils retain 30% to 40% more moisture, thus helping crops through drought periods. Greater resistance to erosion is obtained through the application of Krilium to soil. Evaporation is retarded.

For information on the use of Krilium in agriculture, mail the coupon or contact the nearest Monsanto Sales Office.

Benzoic acid improves dyeing of new synthetic fibers

Mill runs on several of the newer synthetic fibers indicate that Monsanto Benzoic Acid makes possible thorough, all-the-way-through dyeing. Without benzoic acid, these new fibers could be dyed only on the surfaces.

The use of benzoic acid has a swelling effect on the new fibers. This permits the dye to penetrate, giving level, long-lasting color.



BENTHAL IMPROVES BLOND FURNITURE FINISHES

Because it gives paler original color and imparts excellent color retention, Monsanto Benthal* is being used to make better finishes for blond furniture. Benthal replaces up to 20% of the cocoanut fatty acids in these finishes.

In addition to its use in blond finishes, Benthal, a monobasic acid, is employed to improve many short-oil modified resins in these eight ways:

1. **Reduced acid value.**
2. **Reduced viscosity.**
3. **Improved color.**
4. **Less yellowing on high-temperature baking.**
5. **Less after-bodying.**
6. **Better flow.**
7. **Better film adhesion of pentaerythritol types.**
8. **Greater flexibility of dried films.**

Benthal does not retard air drying or baking. It may improve the dried films' resistance to water or chemicals.

DO YOU USE EMULSIFIERS?

Write for Monsanto Technical Bulletins P-123 and P-142 . . . They contain helpful information on formulating various insecticides, fungicides and herbicides.

Phenylacetic acid and derivatives worth investigating

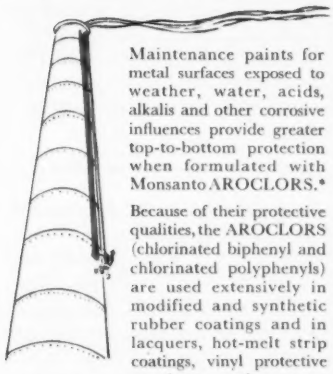
Monsanto produces phenylacetic acid and derivatives which have possibilities for the research chemist. These chemicals are believed to have many undiscovered uses. They have indicated uses as intermediates for pharmaceuticals (antispasmotics, sedatives, antiseptics, anticoagulants); for perfumes; for insect repellents.

Phenylacetic acid is a versatile aralkyl acid with a reactive methylene group.

Derivatives made by Monsanto include: Phenylacetonitrile, phenylacetamide, beta-phenylethylamine, potassium phenylacetate, methyl-phenylacetate, N-ethanolphenylacetamide, N-methylphenylacetamide.

If you wish to conduct experiments with any of these chemicals, samples will be sent to you without obligation. Contact the nearest Monsanto Sales Office or mail the coupon for prompt response.

FOR METAL SURFACES
top-to-bottom protection



Maintenance paints for metal surfaces exposed to weather, water, acids, alkalis and other corrosive influences provide greater top-to-bottom protection when formulated with Monsanto AROCLORS.*

Because of their protective qualities, the AROCLORS (chlorinated biphenyl and chlorinated polyphenyls) are used extensively in modified and synthetic rubber coatings and in lacquers, hot-melt strip coatings, vinyl protective coatings, maintenance paints, fire-resistant coatings, wood-sealer formulations and marine paints.

For technical information, write Monsanto . . . Please state uses to which you wish to put the AROCLORS.

5 reasons for SANTOMERSE No. 1

To formulators of cleaning compounds, Santomerse* No. 1 offers numerous advantages in addition to its well-known effectiveness as an all-purpose detergent and wetting agent.

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LOOK INTO THIS

There's a new Monsanto high-molecular-weight alcohol ester—AE-1—that has definite use possibilities in industrial processing. Among its present and suggested applications, the following may be of interest to you:

Defoamer in producing ethyl alcohol from molasses . . . defoamer in producing glycerol from fats . . . foam control in the manufacture of yeast and other fermentations . . . elimination of foam in certain bottle-washing operations . . . solving foam problem in polystyrene latex water dispersions . . . lubricant for vinyls that are extruded or calendered . . . coplasticizer for rubber hydrochloride and chlorinated rubber.

For more information—also samples—contact Monsanto. Write for Technical Bulletin P-140.

PLASTICIZER
HB-40
OK for vinyls

OK and available now in drum or carload lots, Monsanto HB-40 will help you lower your vinyl production costs without any sacrifice in quality. The price is 17¢ per pound in less than carloads—lower in larger quantities. A partially hydrogenated terphenyl, HB-40 is used as a coplasticizer, or as an extender for primary plasticizers in vinyl extrusions, vinyl pastes, vinyl slush moldings, vinyl calendering.

For full information on physical properties, application and use of HB-40, get Technical Bulletin P-104.

. . . . . .

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Briefs

From recent literature

No. 4 in a Series

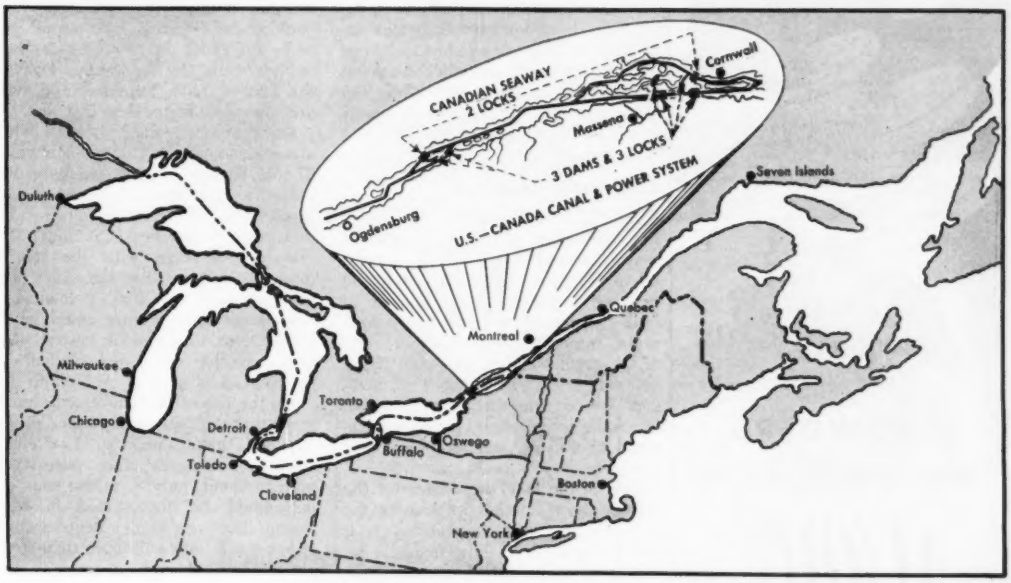
An insecticide suitable for control of chewing insects such as Mexican bean beetle larvae and sucking insects such as the pea aphid is prepared by reacting diethylene glycol with benzhydryl chloride and then with acetic anhydride to form diethylene glycol benzhydryl ether acetate.

Coating compositions for metals result when a modified unsaturated alkyd resin is mixed with about 3% methyl methacrylate or styrene and then polymerized. The alkyd resin is prepared by esterifying a mixture of rosin, maleic anhydride and linseed oil fatty acids with a mixture of diethylene glycol and glycerine. The coatings readily wet metal, dry remarkably fast, and are hard and flexible.

Hydraulic fluids having good lubricating properties which are useful over a wide temperature range are formed by dissolving di(diethylene glycol) glutarate in a solvent such as the methyl ether of diethylene glycol.

Polyvinyl chloride films plasticized with diethylene glycol di-o-benzoyl-benzoate have excellent toughness and strength. Using this plasticizer it is possible to deposit emulsions which will air dry to clear, continuous films.

These developments are abstracted from recent publications or U.S. patents. They may suggest applications of Jefferson Diethylene Glycol in your products or processes.



PROPOSED SEAWAY ROUTES: Not "if" but "which."

460

The Seaway: For Better or for Worse

The St. Lawrence Seaway, cussed and discussed for over 30 years, finally is approaching reality.

Lower bulk chemical shipment costs are a definite possibility, but may be offset by rate increases on finished products.

Real need for seaway: aiding expansion of Canadian industry, raw material sources.

The St. Lawrence Seaway argument, which has been around long enough to vie with capital punishment as a high school debating subject, this week seemed to be rolling closer to reality.

The latest appeal for the seaway came two weeks ago when President Truman submitted a special message on the subject to Congress. In doing so, he echoed the feelings of every president since Taft and every New York governor since Al Smith. But his appeal for a United States-Canada seaway probably fell on deaf ears.

The U.S. and Canada in 1941 signed an agreement for the joint development of the 46-mile International Rapids section of the St. Lawrence and for coordinated, but separate, action on the other portions of the 1,200-mile seaway. Railroad and ocean port opposition has successfully stymied ratification of this agreement.

Disregarding the Washington inaction, however, Canada has been busy drilling test holes as part of its engineering work. And while any seaway would take five to six years once the engineering was complete, there is a good chance that Canada will begin token excavation this year on a seaway which is part of one of the two development possibilities:

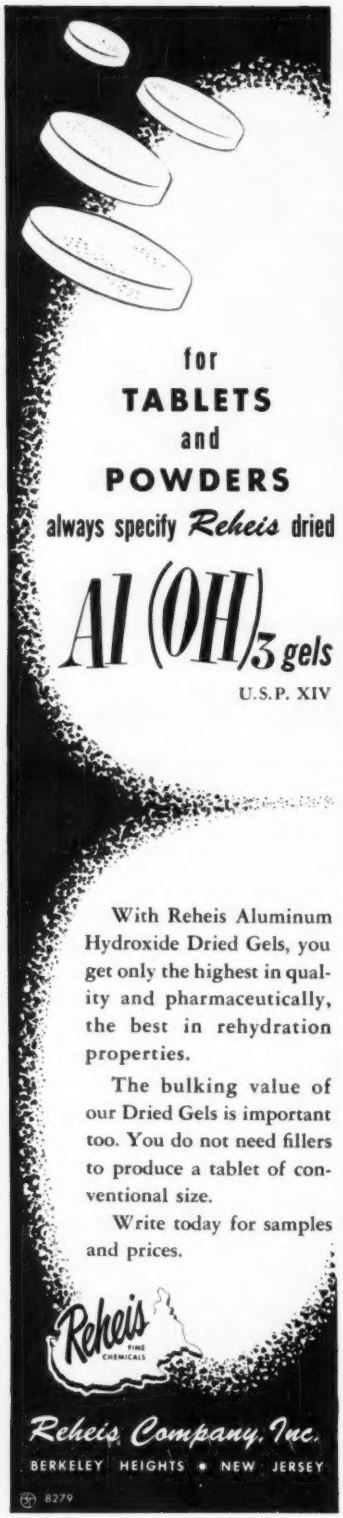
• **Seaway alone.** Forgetting about the latent 2.2 billion in hydroelectric horsepower, Canada can construct a 27-foot deep channel on her side of the international boundary, generally following the course of the present 14-foot canal. It is possible, from an engineering standpoint, to do this, though the cost to Canada would be enormous. Canadian citizens, however, feel so strongly on the matter that they would probably dig the seaway with their hands if asked to.

According to Canadian and some American experts, an all-Canadian canal would not change the water flow in the river, and thus need no approval by the U.S.-Canada Joint Council, which must pass on water diversions. Canada has set up a seaway authority with full power to construct a canal with money supplied by the sale of bonds. Tolls charged would be applied toward repayment.

• **Seaway and power.** Unlike a seaway, development of power would need trans-border cooperation. Barring Federal Government participation, most logical American participant is New York State, which has set up a power authority with the St. Lawrence project as one of its goals.

Canada recently negotiated with the province of Ontario, giving the province full authority over power development. New York and Ontario would love to get together and develop the badly needed power, but the U.S. Government, which says it wants the seaway, is the dog in the manger. The Federal Power Commission turned down the New York application, apparently because it feels all hydroelectric projects should be Federal—and allegedly against the opinions of its engineers, who said that the project is feasible.

While power under this proposal would be a cooperative venture, the Canadian seaway authority would have sole responsibility over construction of a ship channel. Navigation facilities under this plan would cost less than those without power development, and would be considerably better from an engineering standpoint.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While there is doubt over even the starting date, several companies—including at least three chemical firms—have purchased extensive tracts of land on the eastern great lakes. For the companies, the purchase is merely speculation on eventual establishment of a seaway.

Commodity Shipping

From the U.S. viewpoint, the change in commodity distribution that a seaway would bring would not be all to the good. In general, it would promote lower costs to shippers of bulk commodities—iron ore, coal, grain, superphosphate, rubber, alumina, cryolite—when shipping large amounts to a single point. This, however, would mean that railroads would lose some revenue—and hence be pressured to ask higher rates on finished products.

One of the main arguments for the seaway, however, has to do with the iron ore deposits in Labrador. It is also an example of how financial interests in undeveloped resources can bring a change in opinion.

In Cleveland, back in 1948, business interests presented a solid and united front against a seaway. Iron and steel companies there—like their counterparts throughout the nation—feared competition from imported metal on their own home ground. But since then, the powerful M. A. Hanna Co. (linked with Hollinger in exploring the Quebec-Labrador iron deposits) saw that a seaway would be profitable to its interests. Promise of cheaper ore melted opposition, and on Oct. 19, 1951, the chamber of commerce adopted a resolution favoring construction of the seaway jointly by the United States and Canada.

Pros and Cons

This reversal in Cleveland left only the railroad interests in the city still "con." Of course, opposition from the eastern railroads is formidable—even more so since they have the full support of the Association of American Railroads.

The AAR is throwing all its Mimeograph machines into the fray. Unfortunately, the picture it paints is too inky black to be wholly believable.

The same thing is true on the other side: Proponents have painted such a rosy picture that all but the most naive optimist again must doubt the reality of their portrait.

Actually, there is some truth in the claims of each side. The pros say that the seaway is needed for defense, but the cons argue that it would take too long to get ready; and anyway, it couldn't be defended from an air attack. Rejoinder by the pros is that neither could the MacArthur lock at the exit of Lake Superior, and two ore routes are better than one.

Say the cons, American ships with a small enough draft to go through a 27-foot seaway account for only 5% of world tonnage. The pros reply that this is a statistical misrepresentation since it matches U.S. under-27-foot-draft tonnage with the world total, no matter what the draft. To this the cons say that, percentage-wise, more foreign ships could navigate it. Not wholly as an answer, the pros state that when such navigation begins, U.S. ships will be built to fit.

On the use of the seaway, the pros assert that shortages of high-grade iron ore will make deep St. Lawrence channels a necessity, since, even with transshipment, only 5 million tons of ore could be transported in one season. The cons' reply: Beneficiation of low-grade ores will more than supply needs, and even at present, the industry's problem is not getting enough ore—it has more than it can process—but in getting the required steel scrap. To this, the pros point to the fact that the spectacular growth of the steel industry has been on the Eastern Seaboard, not in the Middle West, and the higher cost of taconite would put these mills to a further disadvantage.

Similar arguments can be made on costs, self-liquidating provisions, significance of power development,* foreign competition and what have you.

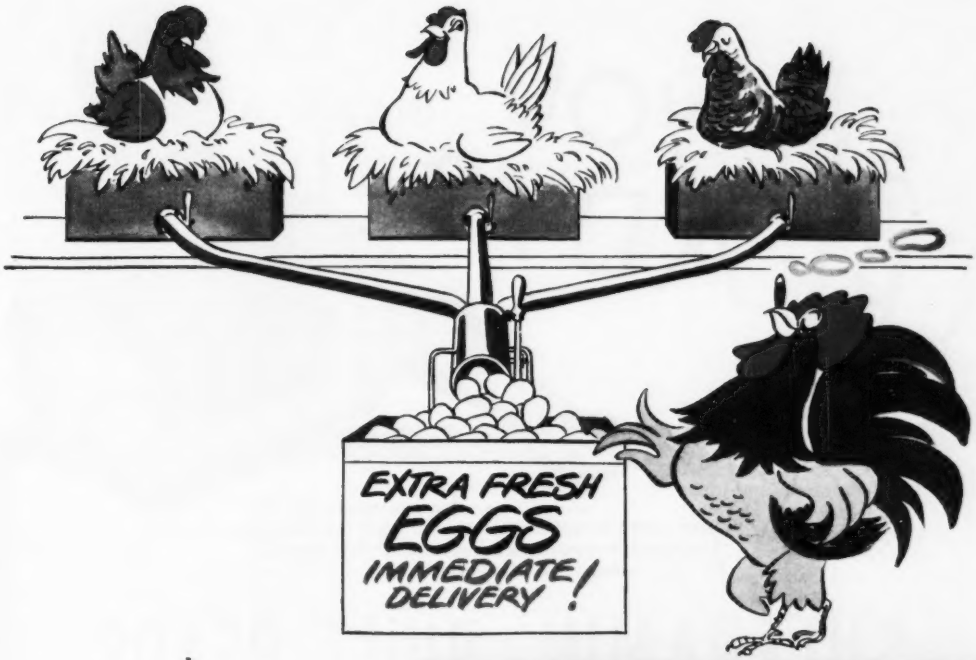
The Unarguable Reason

There are many debatable points about the seaway, but only one favorable argument to which there is no even partly adequate reply: Despite what the seaway might do to some forms of transportation in the U.S., Canada needs it for its own industrial development. Transportation, without a smidgen of doubt, is the most pressing problem in the development of Canada's natural resources.

Canadian railroads and the port of Montreal, which stand to lose as much as their American counterparts, now raise no objections.

Since our own reserves of many raw materials are diminishing in size and increasing in price, Canadian development is of prime importance. For this reason, Canada has been termed—accurately in meaning, but unfortunately in the choice of words—"the United States' last frontier."

* Alcoa, with an aluminum plant at Massena, N.Y., (see map) buys power from as far away as Pennsylvania, estimates that with local power it could cut 7¢ per lb. off metal prices.



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Fair Trade Again

Specialty makers will be "fair trading" again if legislation now going before House committees should be approved.

Both the McGuire and Keogh Bills are aimed at reviving non-signer provisions of the Miller-Tydings Act, putting teeth in fair trade enforcement.

But either bill faces tough sledding in Congress, perhaps a White House veto if it gets that far.

Off again, on again Finnegan may well be the cry of the fair traders this week as House committeemen gird themselves to hear two new bills aimed at reviving fair trade's moldering corpse.

Technically both these bills—the McGuire Bill and the Keogh Bill—would plug holes in the Supreme Court-riddled Miller-Tydings Amendment* to the Sherman Anti-Trust Act, provide a toothy fair trade law that not even that high court could blunt. For in last May's Schwegmann Decision the Court held there was no authority for the non-signer clause in the Miller-Tydings Act (*CW, June 2*), that in the 45 fair trade states, enforcement of the law on non-signers as well as signers was illegal. For all practical purposes this killed cock-robin.

Now fair trade advocates have gone to work on legislation that spells out authority for manufacturers and distributors to enforce price maintenance on retailers whether they sign a fair trade contract or not. Their legislative drive is following two paths:

- The National Association of Retail Druggists is pushing the McGuire Bill which, while amending the Federal Trade Commission Act, also provides fine and imprisonment for violators. The House Interstate and Foreign Commerce Committee is hearing this one.
- The American Fair Trade Council is backing the Keogh Bill which makes a violator liable for a civil damage suit. Hearings on this legislation started this week before the House Judiciary Committee.

The McGuire bill is rated the most likely to get to the House floor since Interstate and Foreign Commerce Committee members are said to be sympathetic. The Keogh bill will have to fight its way out over the objections of Judiciary Committee chairman Manny Celler who lines up with the Federal Trade Commission and Justice Department against fair trade legislation.

Even if the House should pass a fair trade bill, however, this legislation will have an even higher hurdle in the Senate, an inevitable veto awaiting it at the White House.

Rally Round: None the less, fair traders this week are rallying to the cause, maintain that without some sort of price maintenance the independent retailer is at the mercy of big concerns that can promote loss leaders, run him out of business. And they cite the adverse effects on a manufacturer's product when it is used persistently as a loss leader.

Meanwhile, Wright Patman's House Small Business Committee has just come out with a report on fair trade that would seem to back them up. Analyzing arguments for and against the issue, the report—"Fair Trade: The Problem and the Issues"—concludes that misleading price cutting is not in the public interest. Small business, it says, needs protection against loss-leader practices.

The report maintains that the state should retain jurisdiction over retail trade practices, and that Congress should make it possible to enforce fair trade contracts in interstate commerce.

To this opponents of fair trade reply that the main object of price maintenance contracts is to insure the retailer a higher profit margin.

Though only about 10% of all consumer goods is fair-traded, it's a mighty important 10% to many segments of the chemical industries, for included in it are drugs, toilet goods, many household specialties.

* The Miller-Tydings Amendment legalized contracts between manufacturers and distributors to maintain "fair trade" prices.

From Problems to Profits in Paint

A novel solution to the retail paint inventory problem has put Sillers Paint and Varnish Co. in an important position in the West. The company has boosted production to meet sales with a just-finished $400,000 factory, boasts that the new one-level unit's efficiency will match that of any other shelf-goods paint plant in the country.

The recently occupied quarters in Los Angeles County Central Manufacturing District give Sillers what it terms "the most efficient paint manufacturing plant in America for shelf-goods paint production." Further, the new factory's output is four times that of old, overworked facilities.

JOHN V. VAUGHN: California Colors—6 + 14 = 216.

And that's what pleases Sillers' president John V. Vaughn most. The company's rapid rise from relative obscurity in the five years he has been president demands that sort of production to keep pace with booming sales.

On the Level: The new plant is a complete departure from the old fashioned, multi-story factory. The latter type was devised for gravity flow of raw materials through the various steps in paint manufacture. Like the Pittsburgh Plate Glass paint works at Torrance, Cal. (*CW, May 26, '51*), the new plant will be all on one level. "Change-can-pre-mixers" is the advancement which enables Sillers to use single-story operation.

In making paint, raw materials (dry pigments and liquid vehicles) are mixed, then milled, and then packed. Change-can-pre-mixers permit Sillers to eliminate many intermediate steps and most of the stand-by, clean-up, and other non-productive time spent on equipment. Raw materials in the new operation go directly from loading dock level storage into 125-gal. change-can units in which

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they are pre-mixed and delivered to the appropriate mill by monorail conveyers, and automatically dumped. Pre-mixing is done in the storage area.

The new plant, with this simplification of materials handling and increased unit productivity, has a floor efficiency double that of the old shop. And it's double the size of the old outfit—that means four times the production.

That's a sizable increase, but not unexpected by Vaughn who is responsible for the company's abandoning the conservative policies that characterized it since its founding in 1910. His first move as president was to re-design the firm's entire line of packages, increase the sales staff twofold, and begin intensive advertising at the consumer level—something Sillers had never done before. Dealerships were more than doubled, territories expanded up and down the California coast, and Sillers became the first paint manufacturer to use television in that area.

Beyond the Pail: Vaughn sought next to remedy a situation far more basic than the container problem. He tackled the retail paint inventory problem that had bothered him (and a lot of other paint men, too) for years. His solution catapulted Sillers into its present importance in the 11 Western states.

To supply the raft of colors demanded by many decorators, most companies provide color charts and mixing recipes which use a white base paint and a pigment of the desired color. There are two flaws in this procedure, however, contends Sillers: difference in base paint whiteness (base plus pigment won't always give the same color) and pigment overload (white-base paint pigments often mask the colored pigments).

Mixture the Solution: Vaughn's answer to this difficulty—a line called California Colors—was, again, a break with tradition. The bases of California Colors, of which there are six for different uses, are clear and colorless. They are packaged in quarts and gallons, but the containers are only three-quarters full to accommodate the pre-measured pigment packages which are added at the time of sale. From 14 different special pigments, the dealer can make up any of 216 colors in any of six different paints—without measuring anything. A year later, the purchaser can be sure of getting the same subtle shade or tint.

The success of the system has been overwhelming from the time it was introduced. Both dealers and decorators seem to have put their approval on California Colors as an improvement over the costly trial-and-error method of matching colors to decorating schemes. Now they need only select the appropriate colors, either from Sillers' handbook or the retail display panels, and then mix a quart or a hundred gallons, knowing the color will match the sample. The dealer, in turn, with just six gallon-cans of bases and a small stock of prepackaged pigments, can offer his customers 216 colors in six different types of paint. He would have to have 1296 gallons of prepared paint on his shelves to offer the same number.

Vaughn considers his California Colors a practical demonstration of the laboratory solving a sales problem. The success of this product, as well as others in the Sillers' line, put a mighty strain on production, which the new plant has relieved.

Bark Beetle Battle

With insects and diseases causing greater loss in merchantable timber than forest fires, the recent report of Lyle F. Watts, U.S. Forest Service chief, offers an encouraging word on means of controlling such destruction. Chemicals – orthodichlorobenzene, DDT, and now ethylene dibromide—have provided what seems to be effective means of reducing these losses.

Last year the Forest Service sprayed some 700,000 lbs. of DDT, about 400,000 gallons of a 1-in-7 mix of orthodichlorobenzene in fuel oil on forests.

Treatment with fuel oil-orthodichlorobenzene replaces the old con-

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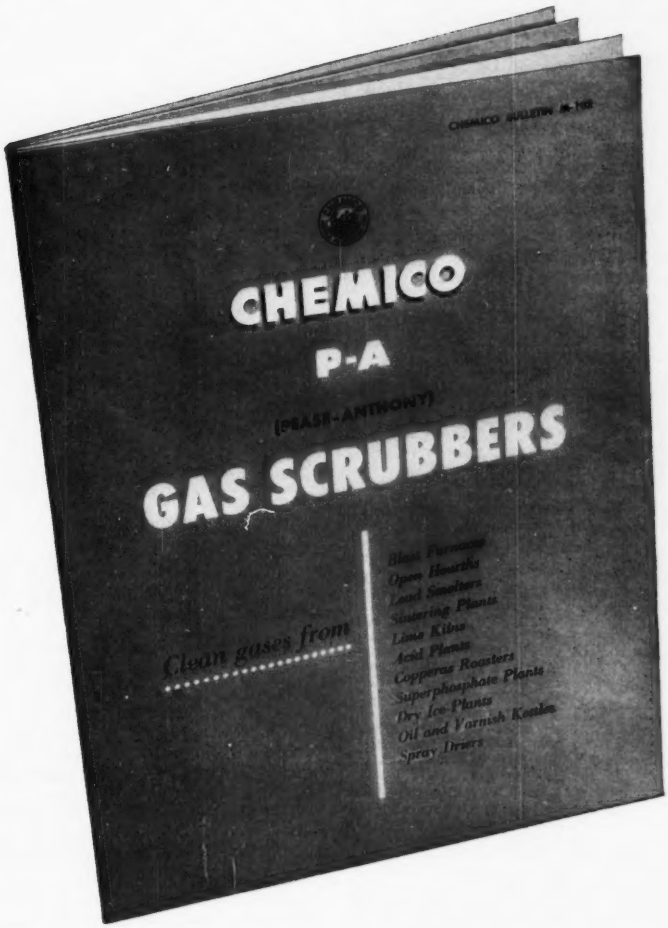

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Name	Properties	Characteristics
Pure Red Iron Oxides and Indian Reds	Fe_2O_3-98.5% SpG.-5.15 Color—Salmon to purplish red	**Composition:** The basic colors of the iron and chromium oxides are determined by chemical composition. Reds are ferric oxide (Fe_2O_3); yellows, hydrated ferric oxide ($Fe_2O_3 \cdot H_2O$); blacks, ferro-ferric oxide (Fe_3O_4); and greens, chromic oxide (Cr_2O_3). All these compounds are chemically stable and light permanent. **Particle Shape:** Physical properties such as oil absorption and suspension characteristics are dependent on particle shape, controlled by manufacturing processes. **Size:** Color range is controlled by particle size—average size increases as color darkens. Uniformity of size determines brightness. **Purity:** Freedom from impurities is essential for superior pigment properties and to prevent deleterious effects in end-products. Control of soluble salts, manganese and copper content are an important part of the Williams' manufacturing operation.
Pure Yellow Iron Oxides	$Fe_2O_3 \cdot H_2O$-99% SpG-4.03 Color—Lemon to dark orange	
Pure Black Iron Oxides	Fe_3O_4-96% min. SpG.-4.96 Color—Blue Black	
Pure Chromium Oxides (and Hydrates)	Cr_2O_3-99% SpG.-5.20 Color—Light to dark green	
Natural Oxides—Ochers, Umbers, Siennas, Metallic Browns, Red Oxides	Wide range of ferric oxide content and red, yellow and brown colors	
Venetian Reds	Fe_2O_3-40% SpG.-3.45 Color—Light to medium red	
Cuprous Oxide	Cu_2O-97% min.	
Extenders—Barytes, Calcium Carbonate, Calcium Sulfate, Silica	Wide range	

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trol method of falling infested trees, stripping the bark and burning it. The mixture penetrates the bark, killing by fumigation destructive beetle larvae feeding there on the wood. Ethylene dibromide, which Watts reports is still being tested, looks like a good bet: It is less bulky than orthodichlorobenzene, and can diluted with water.

Watts' report does not compare costs of control using orthodichlorobenzene and the dibromide; although the dibromide is slightly more than twice as expensive on a pound basis, the Service apparently feels results justify its use. Estimates are for some 250,000 lbs. to be used for bark beetle control.

The program for the bark beetle began in 1950, and is expected to continue through 1952, with follow-ups for several years.

Airplane spraying of orthodichlorobenzene hasn't turned out to be effective, because the insecticide doesn't reach the beetle larvae; hand sprays must be used on tree-to-tree basis. Airplanes are valuable in applying DDT, top chemical in control of defoliators such as the spruce budworm and the Great Basin tent caterpillar.

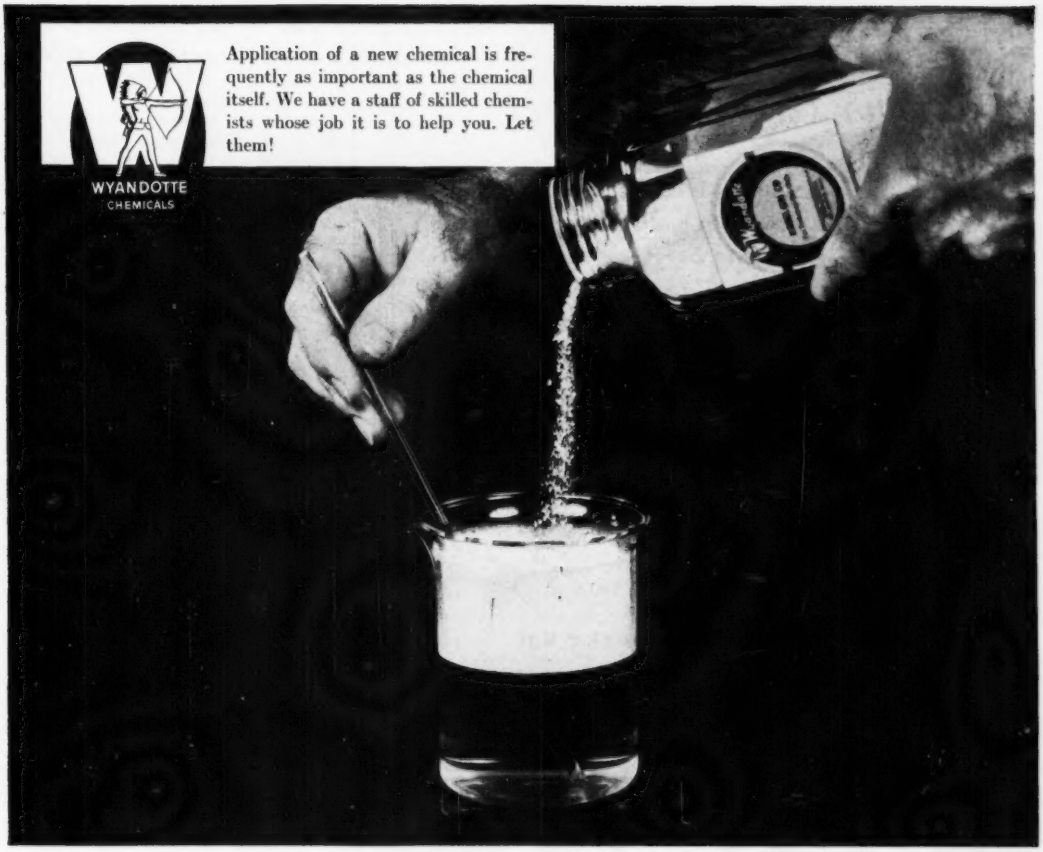
Almost $350,000 worth of DDT was fogged onto trees last year, the Forest Service officials report. A mix of ¾ lb. of DDT in a gallon of fuel oil whips spruce budworm. The State of Oregon, the Forest Service, and private owners have covered nearly 3 million acres of timber with good result, have another million to go in the next two years.

No Relief Now

Despite the recent plea by the Household, Industrial, and Dairy Industry Advisory Committee that NPA release pyrethrum from the stockpile, and relax limitations on the use of tin containers for insecticides packed in quantities under one gallon, specialty manufacturers can expect little relief in the near future on either score.

According to a Munitions Board representative, no plans are at present under consideration to release hard-to-get pyrethrum from Government stockpiles. However, no Government purchases have been made in more than a year due to the substitution of allethrin for pyrethrum in most insecticide uses.

Even so, pyrethrum imports were down 2.2 million lbs. during the first 11 months of 1951 as compared to the same period in 1950 and industry stocks are subsequently low. Balancing this somewhat, allethrin output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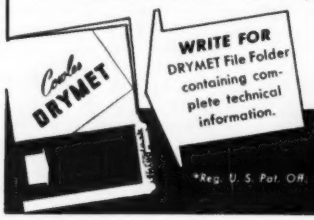

COWLES CHEMICAL COMPANY
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is expected to be boosted to 500,000 lbs. annually by a new plant this year, and another next.

As for the increased allocation of tin, NPA officials hold that tin will remain in short supply despite prospects of imports from the United Kingdom, suggest that specialty manufacturers pack below-gallon quantities in glass containers.

The committee informed NPA that most other insecticide ingredients—chlordane, DDT, lindane, and rotenone—are in good supply, but asked that brass allocations be raised so that production of aerosol dispenser valves could be upped.

•

Wax-Insecticide: An insect-repelling floor wax will soon be distributed nationally by the Freewax Corp. (Tallahassee, Fla.). The new product, said to be a high gloss, non-skid, no-rub formulation of waxes and lindane, is called Freewax, is recommended for use on linoleum, rubber and asphalt tile, cement, varnished and painted floors. It will retail for 69¢ a pint at department, hardware, grocery, and drug outlets.

•

Metal-Working Wax: A new stick type wax—Johnson's #140 Stik-Wax—is being marketed by S. C. Johnson & Sons as a lubricant for metal sanding and sawing, pipe cutting and threading, drilling, tapping, grinding, and flush riveting. Supplied in 1-lb. sticks 2" in diameter, the new lubricant can be used manually as needed or set in position for automatic application. A blend of special solid waxes, the stick is said to provide a better finish on worked pieces, extend the life of saws, drills, and other metal cutting tools.

•

Paint Production: The Scholle Chemical Co. (Chicago) will soon be producing paints and varnishes "down east." The Company has just leased 20,000 sq. ft. of the idle Assabet Mills in Maynard, Mass., expects to employ 75 people when full production is reached.

•

Latest Latex: Pliovic Latex 300 is the first of the new vinyl resins produced by Goodyear Tire & Rubber. An aqueous dispersion of a vinyl chloride copolymer, it is expected to find use in the textile and paper coating industries.

•

Eston Expansion: Eston Chemicals, Inc., Los Angeles, Cal., just completed new facilities for DDT, BHC, toxaphene and other basic insecticide preparations. Expansion cost about $50,000.

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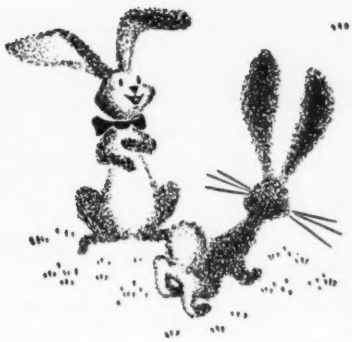

So many new applications have been found for SOLKA-FLOC that demand for it has far exceeded the supply. This is why Brown Company is installing a new plant which will double its SOLKA-FLOC production.

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BOOKS . . . . . .

Manufacturing Processes, third edition by Myron L. Begeman. John Wiley & Sons, New York, N.Y.; 608 pp., $6.

Revised to discuss recent machines, processes and machine tools, this book follows the same pattern of its previous editions in that it explains the advantages, limitations and range of application of each machine and process. Basic topics covered here include foundry practice, pattern work, plastic molding, power metallurgy, hot and cold working of metals, and hot treatment and welding in addition to new sections on plastic molds, automatic production machines, etc.

Light Hydrocarbon Analysis, edited by O. W. Burke, Jr., C. E. Starr, Jr., and F. D. Tuemmler. Reinhold Publishing Corp., New York, N.Y.; xv+639 pp., $15.

Growing out of the work done by the RFC committee which concerned itself with butadiene specifications and methods of analyses, this book outlines analytical procedures in the field of light hydrocarbons against a background of butadiene processing information. The volume was intended to be of value to both academic institutions and industrial personnel and as such includes material on butadiene production and applicable test methods, schemes of analysis, handling of light hydrocarbons, a compilation of analytical methods, and two final chapters on test samples and evaluation of the analytical methods reviewed.

The Manufacture of Intermediates and Dyes, by G. H. Frank. The Chemical Publishing Co., New York, N.Y.; 177 pp., $4.50.

"How-to-do" type of book discussing methods and materials used in the manufacture of dye intermediates. Covering the benzene, napthalene and anthracene series of dye intermediates, this volume explains when and why certain raw materials and processes are used in preference to others. Additional sections are devoted to plant equipment used, testing methods, and formulas for calculating results.

Fluorine and Its Compounds, by R. N. Haszeldine and A. G. Sharpe. John Wiley & Sons, Inc., New York, N.Y.; 153 pp., $1.75.

One of the "Methuen's Monographs on Chemical Subjects," this volume gives an account of modern inorganic and organic fluorine chemistry, emphasizing the relation between structure and properties of inorganic fluorides, and the influence of fluorine on the properties and reactivity of organic compounds.

Briefly Listed

HYDRAULIC RESEARCH IN THE UNITED STATES, 1951, edited by Helen K. Middleton and Sonya W. Matchett, 190-page National Bureau of Standards publication intended as a guide to current and completed projects conducted by various hydraulic and hydrologic laboratories in this country and Canada. Government Printing Office, Washington 25, D.C.; $1.25.

AIR POLLUTION ABATEMENT MANUAL, ANALYTICAL METHODS, 16-page chapter prepared by L. V. Cralley summarizing recently developed technical procedures—chemical, physical, biological and tracer—that have been devised to determine the factors contributing to air contamination. Manufacturing Chemists' Association, Inc., Woodward Bldg., 733 15th St., N.W., Washington, D.C.

MEETINGS...

Manuf. Chemists' Assn., air pollution abatement conf., Statler Hotel, N.Y., Feb. 25-26.

Drug, Chemical & Allied Trades Section of New York Board of Trade, annual dinner, Waldorf-Astoria Hotel, N.Y., Mar. 6.

Natl. Assn. of Corrosion Engineers, annual conf. & exhibition, Buccaneer Hotel, Galveston, Mar. 10-14.

Natl. Farm Chemurgic Council, annual conf., Statler Hotel, St. Louis, Mar. 11-12.

Soc. of Plastics Ind., Inc., national plastics exposition, Convention Hall, Phila., Mar. 11-14.

Amer. Inst. of Chem. Engineers, Atlanta Biltmore Hotel, Atlanta, Mar. 16-19.

Coml. Chem. Dev. Assn., annual open meeting, Statler Hotel, N.Y., Mar. 20.

Chicago Intl. Trade Fair, Navy Pier, Chicago, Mar. 22-April 6.

Natl. Sanitary Supply Assn., convention, Conrad Hilton Hotel, Chicago, Mar. 23-26.

Amer. Chem. Soc., national meeting, Buffalo, Mar. 23-27.

Packaging Machinery Manufacturers Inst., semi-annual meeting, Dennis Hotel, Atlantic City, Mar. 30-31.

PICTURES IN THIS ISSUE:

Cover (top)—Reni Photo; Cover (bottom)—Wide World Photo; p. 11—B. F. Goodrich Co.; p. 12—Reni Photo; p. 13—Esso Standard Oil Co.; p. 14—Intl. Minerals & Chemical Corp.; p. 18—Wide World Photo; p. 52—U.S. Forest Service.

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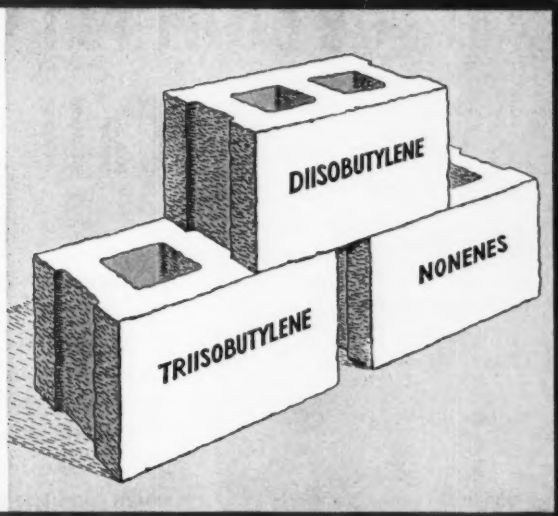

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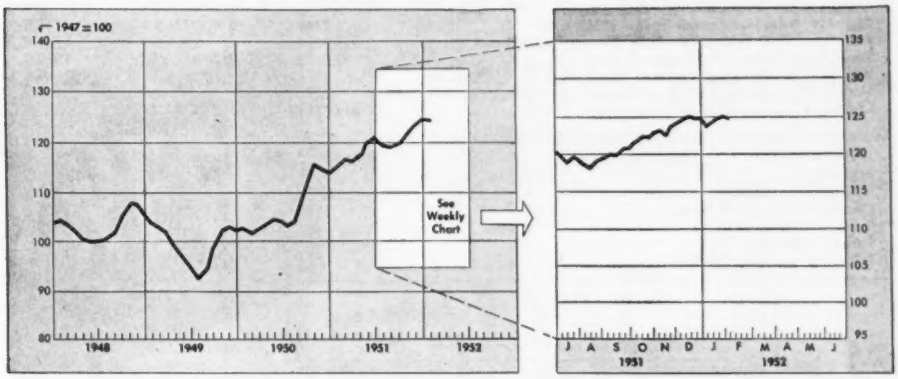

CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries

MARKET LETTER

The medicinals and pharmaceuticals business is in a state of transition marked by price reductions. In the case of penicillin, the price has gone down because of keener competition and a temporary surplus due to export doldrums.

Another medicinal came down this week, but the reason was not competition so much as improved process know-how and widened demand. The product is Tryptar, a crystalline trypsin; its producer, Armour & Co.; and the reduction, 30%.

Dihydrostreptomycin has taken a considerable amount of play away from its precursor, streptomycin. Production figures point up this trend. Output of dihydrostreptomycin rose from 13.8 million grams in October to 16.2 million grams in November, according to latest Tariff Commission figures. During the same time, streptomycin itself went down from 1.7 to 1.1 million grams.

The long-range prospect for greater supplies of polyethylene depend on when new production can come in, and that won't be for nearly a year. NPA pointed out to an industry advisory committee that the present demand is three times the supply. If it hadn't been for an easing in demand by the military—which takes about one-third of all output—supplies would be even worse.

But NPA painted a rosier picture for another industry advisory committee. By September 30, according to this version, polyethylene may be taken off allocation. As of now, only the Pentagon knows which estimate comes closer to the mark, but naturally isn't talking.

One chemical that's down plenty right now is acetic anhydride. Output fell off by around 20% in one month. Reason: The two major uses—cellulose acetate plastic and acetate rayon—are both in a lull.

This development in surface coatings will bear watching—the increasing use of rosin-modified esters. While the unmodified phthalic alkyds have remained steady, rosin-type coatings have been on the upswing. Sharpest gains: in combination with phenolics, with maleic, and with pentaerythritol.

MARKET LETTER

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
Chemical Industries Output Index (1947=100)	124.8	124.9	116.5
Bituminous Coal Production (Daily Average, 1000 Tons)	1,738.0	1,870.0	1,569.0
Steel Ingot Production (Thousand Tons)	2,079.0	2,090.0	1,969.0
Wholesale Prices—Chemicals and Allied Products (1926=100)	132.5	132.7	145.5
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	237.4	239.0	224.5
Chemical Process Industries Constructon Awards	$13,778,000	$40,925,000	$22,190,000

MONTHLY BUSINESS INDICATORS—EMPLOYMENT (Thousands)	Latest Month	Preceding Month	Year Ago
All Manufacturing	12,889	12,915	13,056
Non-durable Goods	5,559	5,584	5,802
Chemicals and Allied Products	538	542	524
Paper and Allied Products	408	411	428
Rubber Products	216	217	222
Petroleum ond Coal Products	196	198	191

Export quotas on those scarce drying oils, tung and castor, will stay unchanged this quarter. The U. S. Department of Agriculture will approve up to 100 thousand pounds of commercial and sulfonated castor oil, and 90 thousand pounds of tung oil for shipment abroad.

Coconut, oiticica, and medicinal castor oil will have no definite quantity limits. However, export licenses are still required and unusually large amounts will be subject to a U. S. D. A. once-over.

Custom molders and fabricators of plastic products have until Mar. 15 to revamp their price schedules: The changes are embodied in Revision 1 to Sup. Reg. 14 of CPR-22, as worked out by OPS and the industry advisory committee.

Regulation 14 is an attempted compromise between CPR-22 and typical industry markups. Rev. 1 broadens the coverage to include those who were not in business before Jan. 1, 1950. Tentative ceilings can be established now, subject to later review.

Unless exempt by some special OPS regulation, producers must stand on CPR-22 pricing, whether it results in a price advance or a price rollback. A large majority of chemical manufacturers have complied, but a few, according to OPS are under the impression that rollbacks are precluded, but such is not the case.

Small business note: Manufacturers whose gross in the last fiscal year did not exceed $250 thousand can stay with the year-old GCPR ceilings without filing under CPR-22.

The contest between hydrofluoric acid and synthetic cryolite for supplies of acid grade fluorspar will get keener in the next few years. Both demands are growing faster than increase in the mineral output. E.g., NPA is pushing towards a capacity of 130 million pounds of acid yearly—a 36% boost—by the beginning of 1955.

But aluminum producers' demands for synthetic cryolite will mount even more because of: (1) heavier demand for the metal ,and (2) depletion of Greenland's natural cryolite deposits.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending February 11, 1952

	Change	New Price		Change	New Price
UP					
Benzene Hexachloride, tech. c.l., gamma units	$.002	$.020	Zein	$.03	$.38
DOWN					
Carnauba Wax, No. 1 yel.	.02	1.18	Quicksilver, 76 lb. flask	2.00	203.00
Linseed Oil, raw, tank car	.01	.185	Shellac, lemon No. 1	.025	.47

All prices per pound unless quantity is stated

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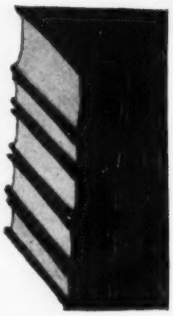

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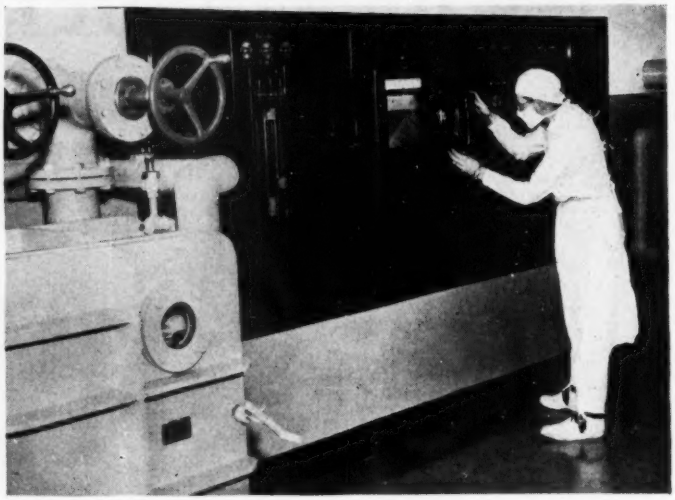


PENICILLIN PRODUCTION: Feed supplements will bolster wobbly exports.

Pause for Penicillin

Most penicillin producers pare 20% off prices in attempt to move a domestic surplus.

Slump in demand is due chiefly to a setback in the export market arising from increased competition, soft foreign currency.

Nevertheless, the growing volume of business in antibiotics for animal feed supplements will need still-abuilding output.

The latest reduction in the price of penicillin does not result from process improvement, which has brought the cost down heretofore. The price took a tumble this time because of the arrival of rugged competition, hastened by a slowdown in the previously active export market. During the past month, most producers trimmed prices by some 20%, bringing this week's quotations to around 25-27¢ per 100 thousand units. Moreover, it's possible the decline could continue.

Ordinarily, a reduction in penicillin price ranks among the lesser novelties. Bigger volume and improved processing took turns, during the past decade, in bringing about a 95% saving to the consumer. In comparison, the latest change is trifling, but economically it is more significant since it marks the first case of price cutting to move an embarrassing surplus.

Drugs Abroad: The current impasse has been brought about in large part by a letdown in foreign business. To producers of most U.S. chemicals, the export market is handy and profitable, but also expendable. But producers of penicillin in this country have leaned on export sales to move some 20-25% of their output. Small wonder that even a temporary lapse here will have a quick reaction at home.

As all exporters know but too well, selling abroad is potentially lucrative, but beset with pitfalls for the unwary. It seems to consist largely, in many cases, of uncertain demand and plenty of red tape. There are some added complications today. To begin with, most countries have soft currencies, and need considerable persuasion to part with any dollars they have, whatever products their citizens may prefer.

To this trend is linked the desire for economic self-sufficiency that has spurred the building of new plants in India, Italy, and Japan. Japan is able to produce more than enough to take care of the Nipponese, and is now eyeing the penicillin buying potential of Malaya and the Philippines. Strong competition is felt by U.S. producers from Germany, traditionally a big factor in pharmaceuticals and medicinals for far-off markets. Finally, of course, is the livelier competition from other U.S.-made antibiotics.

Silver Lining: Strangely enough, most penicillin producers are not unduly worried by these events. They feel sure of a strong demand in the world market, and can see greater needs in the U.S. in the fight against disease, though the trend is now toward admixtures with some of the other antibiotics. But as far as fast growth is concerned, producers are banking on the feed supplement business to keep them well in the black despite the lull abroad.

This demand, developed and proved within the past two years, now fattens the coffers of all antibiotics suppliers to the tune of $20 million a year. Most of this is penicillin, since it is by a fair margin the most economical one used so far.

Muriatic Acid Catches Up

The market for muriatic acid* has returned to normal after an entire year of demand outrunning supply. Since the beginning of 1952 there has been plenty to meet all requirements. In some regions at times the situation even takes on the aspect of a miniature glut. But the outlook is not alarming to the producers; most of them see increasing tightness later this year.

As it happens a good deal of muriatic is now sold at substantially lower prices than a few months ago. Though this would ordinarily be a sign of market weakness, this time the price change does not reflect such a turn.

Instead, it is mostly the result of at least two producers filing their prices under CPR-22. That made it mandatory, of course, for them to figure ceilings for all their products under the Capehart formula. They would not have made the move if it had not resulted in higher ceiling for most products, but some—like muriatic—had to come down.

Both producers are located in the East and sell almost entirely in the Eastern market. The larger, General Chemical Division of Allied Chemical now quotes $27 a ton for the 20° Be. acid, fob, works. Formerly the price had been close to $35 on a freight-equalized basis. The change applies both to acid made by General from salt and sulfuric acid (Mannheim process) as well as byproduct muriatic sold for National Aniline at Buffalo and Syracuse.

Another producer of byproduct 20° acid—Heyden Chemical—came down in price from $41 to $30.55 a ton delivered in the New York City area. But a number of major producers still hold firm to former prices for muriatic, indicating that supply is not too far above demand.

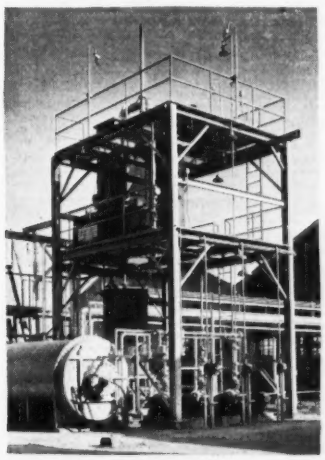
In the Making: Considering that supply—especially of byproduct—has climbed fast in the last few years, it is noteworthy that demand has stayed right along with it. Byproduct hydrogen chloride now accounts for more than two-thirds of all output of this product, continuing to gain at the expense of Mannheim production, which appears to be on the decline.

This trend can be traced partly to the sulfuric shortage, but in the long run it is a matter of economics. In the East, most of the hydrochloric plants have been in for some time, so the Mannheim predominates. In the Southwest, most of the acid is byproduct; considerable amounts are used there and lots more is barged up the Mississippi and Ohio for Midwest distribution.

Wants Stay Up: Generally, the Midwest demand has been holding up well, and the Eastern needs (mostly for acid solution) show more fluctuation. Biggest requirements include oil-well acidizing to increase recovery of oil from oil-bearing limestone strata. Other major uses in vinyl and ethyl chloride take the anhydrous hydrogen chloride.

Some weakness has developed, however, in some of the other applications that use the solution form. Tin and zinc shortages have cut back on the needs for muriatic in tinning and galvanizing. The Texas City tin

* Also called hydrochloric acid, a water solution of hydrogen chloride.



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smelter doesn't need so much muriatic these days for lack of tin ore to process. Another outlet that hasn't been thriving lately is textile processing.

But much of this letdown is temporary, and with the foreseeable increased needs for the anhydrous and the solution forms of hydrogen chloride, producers shouldn't be concerned about selling their output.

"On the Other Hand"

Producers of tricresyl phosphate, following a recent half cent-per-pound price increase, last week foresaw a "yes—but" supply situation.

The demand has been firm enough, but on the other hand, supplies are not as tight as they once were. While one producer saw possibilities of a sagging market, another reported: "We expect to keep on doing business like crazy."

It is a safe bet, however, that business is good enough to absorb the price increase, which was attributed to higher raw material costs. Some producers, however, upped their prices less than they could have under Government regulations.

Present prices for TCP range from 35½¢ per pound in tankcar quantities to 38½¢ in less-than-carload drum lots, all prices on a delivered basis. Quoted prices are usually the same for material derived from coal or petroleum cresylics. Some producers of coal-based material, however, have slightly shaded their quotations.

Actually, the main trend evident in TCP manufacture is the increased production via petroleum cresylics. Output of these fractions has generally increased, while supplies of the coal cresols have been limited. Composition of the cresylic acid raw material, of course, must be regulated in order to standardize properties of the ester. In general, however, petroleum and coal TCP are interchangeable. One exception is in adhesives, finicky in formulation, where one or the other may be better.

Use as a plasticizer probably accounts for close to 90% of sales, though this is less, percentagewise, than it has been in the past.

The ester is compatible with vinyl, polystyrene and cellulose-derived plastics, but probably finds greatest demand in plasticizing vinyl chloride and nitrocellulose.

In traditional plasticizer formulations, TCP and diesters like dioctyl phthalate (DOP) are used in combination. While the ratio of the two can be changed to a slight extent, depending on the end use, they cannot substitute for each other.

TCP contributes non-flammability —especially valuable for nitrate lacquers—resistance to migration and to extractability in oil or water solutions. DOP imparts better cold temperature characteristics and is more resistant to aging.

Other Ends: Most of the phosphate not used in plasticizers goes to oil additives. A few parts per 100 increase oil film strength considerably, making it valuable for heavy duty oils.

Flame-resisting characteristics are valuable in hydraulic fluids used in hot-running equipment. Since TCP expansion is pretty largely tied to increases in vinyl consumption, manufacturers are looking to development work on other applications in hope of promoting even faster growth.

Government Needs

Bid Closing	Invitation No.	Quantity	Item
Armed Services Petroleum Purchasing Agency, Washington, D. C.			
Feb. 20	52-18-B	Various	Dry cleaning solvent
Commandant of the Marine Corps, Washington, D. C., Attn. Supply Dept., Procurement Section			
Feb. 26	742B	1,200 qt.	Solvent, carbon removing in 1 qt. cans
Feb. 26	742B	1,000 lbs.	Compound, cleaning cooling system in 1-lb. packages
Armed Services Medical Procurement Agency, 84 Sands St., Brooklyn, N. Y.			
Feb. 18	1028B	17,144 btl.	Drugs and chemicals
General Services Administration, 1031 So. Broadway, Los Angeles 15, Calif.			
Feb. 18	LA 346-52	24,000 lbs.	Sodium metasilicate granular white /P-S-604/
Business Service Center, Region 2, General Services Administration, 250 Hudson St., New York 13, N. Y.			
Feb. 20	Ny-2B-35680B	650 gal.	Paint primer sealer white
Feb. 20		200 gal.	Paint drier
Business Service Center, Region 3, General Services Administration, Washington 25, D. C.			
Feb. 26	2M-7656-R	2,400 gal.	Soap, liquid, toilet in 1-gal. containers
Headquarters Air Material Command, Dayton, O.			
Feb. 20	52-578B	6 items	Compound cleaning aircraft
Feb. 20	52-580B	72,335 gal.	Fluid anti-icing isopropyl alcohol

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Autoclaves, Tile Lined. First Machinery Corp., 157 Hudson St., N.Y. 13, N.Y.

Calenders, New Rubber Calenders, 6x12", Johnson joints, 7½ HP motor, Complete. Eagle Industries, 110 Washington St., NYC.

Centrifugals, Bird Rubber Covered. First Machinery Corp., 157 Hudson St., N.Y. 13, N.Y.

Centrifuge: 1-Sharples #16 MD, Open Type, S.S. Construction. Contact: R. P. Scherer Corp., 9425 Grinnel Ave., Detroit 13, Mich. L. R. Farnam.

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Dryer, Vacuum Shelf, 44"x44" shelves, MD pumps, complete. Eagle Industries, 110 Washington St., NYC.

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Dryers, Stainless Drum 5'x10'. First Machinery Corp., 157 Hudson St., N.Y. 13, N.Y.

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Evaporators, Multiple Effect. First Machinery Corp., 157 Hudson St., N.Y. 13, N.Y.

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Filter, Vallez #49, 41 Stainless covered leaves 44½" dia. Late Type. Stein Equipment Co., 90 West St., N.Y.C. WOrth 2-5745.

Filters, Sweetland, up to #12. First Machinery Corp., 157 Hudson St., N.Y. 13, N.Y.

Filter, 3'x2' Oliver Rotary Vacuum. Equipment Clearing House, 289 10 St., B'klyn 15.

Filter, 8'x12', Feinc all S/S Rotary Vacuum, Consolidated Prods., 18 Park Row, N.Y. 38.

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Filter Press, 30"x30", iron, Shriver and Johnson, 35-40 chambers, 6. Consolidated Products, 18 Park Row, N. Y. 38 BArclay 7-0600.

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Cyanoacetic Acid

9-p. technical data sheet reporting on cyanoacetic acid as an intermediate in chemical synthesis, reviews the acid's properties, specifications, packaging details, toxicity, applications, and various types of reactions involving the compound. Kay-Fries Chemicals, Inc., 180 Madison Ave., New York, N.Y.

Coating Terms

16-p. booklet containing over 200 definitions of terms commonly used in industrial products finishing. The Sherwin-Williams Co., 101 Prospect Ave., N.W., Cleveland, Ohio.

Multi-Color Finish

4-p. bulletin describing the firm's multi-color finish with reference to application methods, recommended spray guns and accessories, cleaning equipment, specifications, drying times, finish, coats, colors and storage conditions. United Lacquer Mfg. Corp., 1001 W. Elizabeth Ave., Linden, N.J.

Pesticide Concentrates

Bulletin entitled, "Agricultural Chemical Formulators' Manual of Pesticide Concentrates," presents compiled data related to practical requirements in insecticide and herbicide fields. The Emulsol Corp., 59 East Madison St., Chicago, Ill.

Equipment

Mechanical Rectifiers

30-p. booklet discussing the design, construction and operation, efficiency, control and instrumentation of firm's mechanical rectifiers intended for power conversion uses between 50 and 400 volts d-c. Illustrations and diagrams supplement text. I-T-E Circuit Breaker Co., 19th and Hamilton Sts., Philadelphia, Pa.

Rubber Processors

12-p. bulletin reviewing company's design, engineering, fabricating and processing facilities in addition to typical products manufactured. Arco Rubber Processors, 4033 Homestead Rd., Houston, Tex.

Filtration

24-p. bulletin covering the use of diatomaceous filter aids in filtering water for reclamation and re-cycling in industrial processing, prevention of pollution, and purification of domestic and industrial potable supply. Specific data given is applicable in general to clarification of any water. Great Lakes Carbon Corp., 18 E. 48th St., New York, N.Y.

Automatic Production Equipment

16-p. reprint of a talk by Rudy P. Lowe entitled, "Streamlined Materials Handling in Continuous Production," discusses the construction, operation and underlying principles of fluid and solid metering elements, controlled feeding devices and weighing instruments. %Proportioneers, Inc.%, P.O. Box 1442, Providence, R.I.

Rotary Pump

4-p. bulletin describing general service screw-type rotary pump designed for handling petroleum products and other light viscous fluids; included here are cutaway section drawings, viscosity tables and dimensions for various frame sizes. De Laval Steam Turbine Co., Trenton, N.J.

Metallic Packings

8-p. catalog of firm's line of flexible metallic packings presents descriptions, service recommendations and details on sizes, standard packages and weights for "V" metal insert packings, metallic valve stem, plastic core metallic face, all metallic, flexible metallic, high temperature aluminum and braided copper packings. Raybestos-Manhattan, Inc., Manheim, Pa.

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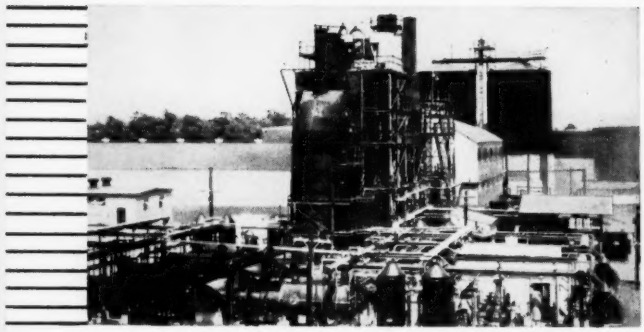

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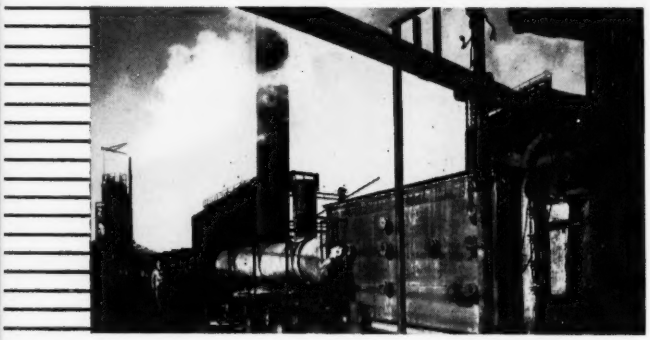

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